

MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association
Northern Minnesota Medical Association and Minneapolis Surgical Society*

EDITOR

CARL B. DRAKE, M.D., St. Paul

ASSISTANT EDITORS

STANLEY R. MAXEINER, M.D., Minneapolis

DONALD K. BACON, M. D., St. Paul

ASSOCIATE EDITORS

First District

GEO. S. WATTAM, M.D., Warren

Third District

E. L. TUOHY, M.D., Duluth

Fifth District

GEO. B. WEISER, M.D., New Ulm

Second District

F. H. KNICKERBOCKER, M.D., Staples

Fourth District

F. L. ADAIR, M.D., Minneapolis

Sixth District

F. M. MANSON, M.D., Worthington

Seventh District

H. B. AITKENS, M.D., Le Sueur Center

Eighth District

F. P. STRATHERN, M.D., St. Peter

SEPTEMBER 1923

CONTENTS

ORIGINAL ARTICLES:

H. M. RICHTER, M.D., Chicago—Gall Tract Surgery.....	523
RUSSELL M. WILDER, M.D., Rochester—How Is the Overworked General Practitioner to Use Insulin?	524
CHARLES LYMAN GREENE, M.D., St. Paul—The Symptoms and Signs of Acute Lobar Pneumonia	530
H. T. NIPPERT, M.D., St. Paul—Treatment of Pneumonia.....	534
ARNOLD SCHWYZER, M.D., St. Paul—The Surgical Complications of Pneumonia.....	538
GEORGE K. HAGAMAN, M.D., St. Paul—Pneumonia in Children.....	542
F. C. RODDA, M.D., Minneapolis—Nitrobenzol Poisoning in Children: Report of Three Cases Caused by Shoe Dye.....	544
SAMUEL AMBERG, M.D., Rochester—The Accessory Nasal Sinuses as Foci of Infection in Children	547

(Continued on Advertising Page III)

Owned and Published Monthly by

THE MINNESOTA STATE MEDICAL ASSOCIATION

BUSINESS MANAGER

J. R. BRUCE, 402 Guardian Life Bldg., Saint Paul

Telephone: N.W. Cedar 1683

210 Commercial Bldg., Minneapolis

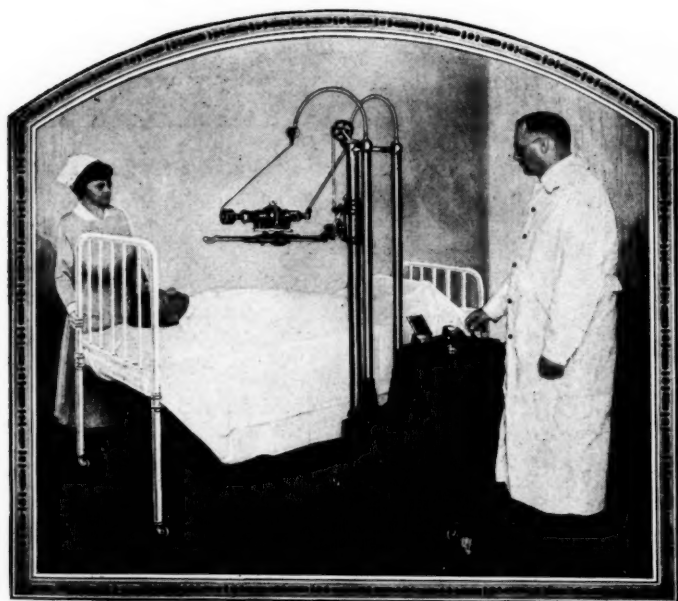
Telephone: Atlantic 2716

Entered at the Post Office in Saint Paul as second class mail matter.

Accepted for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 13, 1918.

Subscription Price { \$3.00 yearly, Domestic
 { \$3.50 yearly, Foreign

CONTENTS OF THIS PUBLICATION PROTECTED BY COPYRIGHT



BRINGING THE X-RAYS TO THE PATIENT

A FEW YEARS AGO the best Mobile X-Ray Unit was owned by the United States Army. The equipment comprised a motor-truck on which a Delco generator and Victor X-Ray Unit with current controlling devices were mounted.

From this has evolved the Victor Stabilized Mobile X-Ray Unit of the present, the highest perfection yet attained in apparatus of this type.

It was Victor research and development work that made this astonishing result possible—research which culminated in the self-rectifying "Radiator" Type Coolidge Tube. The X-rays are now easily brought to the bedside of a patient too weak to be removed to the X-ray room.

This Victor Mobile Unit is more efficient than even the larger and heavier apparatus of ten

years ago. Its milliamperage is 30, which is a gauge of its powers. Moreover, it is provided with the Victor-Kearsley Stabilizer which insures uniformly good results in spite of current fluctuations in the line. Only Victor Mobile X-Ray Units are thus equipped.

A circuit breaker also incorporated in this unit guards against damage to the X-ray tube and apparatus, by automatically shutting off the current from the supply line in case of "overload," i. e., current beyond the capacity of the tube, or in case of short circuit or ground. Obviously, this same device becomes important from the standpoint of safety to both operator and patient.

This Mobile Unit has been designed to meet every requirement for practical radiographic and fluoroscopic diagnosis.

An exhaustive descriptive circular will be sent on request

VICTOR X-RAY CORPORATION, Jackson Blvd. at Robey St., Chicago
Territorial Sales and Service Stations:

Minneapolis: 1007 Marquette Avenue



MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association
Northern Minnesota Medical Association and Minneapolis Surgical Society*

VOL. VI

SEPTEMBER, 1923

No. 9

ORIGINAL ARTICLES

GALL TRACT SURGERY*

H. M. RICHTER, M.D.

Chicago

The first stage in surgical results is early diagnosis, so you will pardon my digression to call your attention to a few salient facts frequently overlooked.

Gall stones do not spring suddenly into existence as in the Miltonian idea of creation. The routine history if carelessly taken may state that the trouble began with an attack of sharp abdominal pain, the attack coming on after a heavy meal, and that there have been irregular recurrences since. The story may seem to date from that time. But careful inquiry will practically always elicit the information that for many years before, or possibly during a period of some years many years ago, the patient had digestive disturbances of a peculiar character associated with belching or with a feeling of distention after meals or possibly after certain foods—as meats or fatty foods, etc. With this there may, perhaps, have been some heart-burn or the heart-burn may have been an important part of the story.

But most suggestive is the story of a stomach that refuses certain articles of food or that seems overfilled after a few mouthfuls though the patient seemed to have an appetite up to that moment. These early symptoms with the findings of a careful examination are sufficient to justify a diagnosis of gall tract infection long before stones form. But in practice such a diagnosis is mainly a matter of hindsight instead of foresight. The diagnosis is made most commonly when stones or active infection are present.

Allow me to cover just a few points that are regarded as important in the technique of gall tract

operations. First—as to cholecystectomy versus cholecystostomy. The infected gall bladder has peculiar difficulties in the way of its complete recovery from infection. The structure of its wall combined with the tendency to stasis render the persistence of infection likely. We therefore feel that most infected gall bladders should be removed. We do not remove an apparently normal gall bladder containing a few simple cholesterol stones in young adults nor gall bladders in fair condition in the very aged. Where gall stones are found incidentally in the course of other serious operations we commonly drain the gall bladder and in the presence of very acute inflammation and of jaundice we do not remove it. Otherwise we feel that cholecystectomy is indicated.

The removal of the gall bladder is proceeded with along any of the usual lines. We think it rather cleaner to begin with the cystic duct and peel the gall bladder out of its bed. But a distended gall bladder may often be peeled out more easily in the reverse direction. The first essential feature is that the cystic duct should be definitely visualized before it is clamped and severed. No amount of theoretical knowledge of possible anatomical variations compares with just seeing the part upon which you are operating. The duct should be severed close to the common duct. Though I have never found difficulty caused by the stump of the cystic duct becoming distended and forming a new gall bladder or causing trouble from infection, a few instances of this sort have been reported and it is probably well to take cognizance of the possibility. The cystic artery may be ligated with the duct or separately as appears simplest in the individual case. When the gall bladder is peeled out of its bed there is left behind a sulcus with more or less frayed peritoneal flaps on either side and a cystic duct stump in the grasp of a forceps. The cystic duct should be ligated with the finest catgut that can readily be used. A single ligature without any unusual furbelows suffices. The bile tension in the duct is not comparable with the blood tension in the radial artery and no extraordinary means

*Presented before the Annual Clinic Week, Minneapolis, April, 1923.

are required for its ligation. Having ligated the duct that part of the operation is completed.

The duct is safest when dropped and unmolested. Suturing it behind the peritoneum or doubling it upon itself or tucking it away in some corner is meddlesome surgery and probably an index of meddlesomeness in other stages of the operation. The sulcus in the liver and its free flaps of peritoneum are disregarded except to make certain that no oozing of blood persists. It is unnecessary and therefore pernicious to suture the flaps over the sulcus. The adhesions about this area are caused in the main by the gauze packs and rubber tubes that are left behind. The sulcus is quite innocent and retracts to such an extent as to minimize adhesions to the adjacent stomach or bowel. This then completes the operation of cholecystectomy except that it may satisfy a craving for complete peritoneal toilet to drop the omentum in between the under surface of the liver and the adjacent viscera following the suggestion of E. Wylls Andrews. No drain of any kind is left behind. The absence of a foreign body permits of primary healing with a minimum of adhesions. It minimizes the amount of infection, for a foreign body of any type permits the extension of infection from without, and infection delays healing.

It has been suggested that since bile not infrequently escapes along the drainage tube the drainage tube is a life-saving factor in the prevention of a bile peritonitis. The fact is, however, that it is the drainage tube which prevents the primary healing about the stump of the cystic duct and so permits the bile to escape. Therefore, instead of being a safety factor it is the cause of the bile leakage.

The removal of stones from the common duct through an incision above the duodenum should be followed by closure of the incision by accurate suturing when the surgeon can be sure of the patency of the duct. Suture of this incision is exactly analogous to suture of a similar incision in the intestine. The duct contents, however, are far less infective than those of the intestine and suturing is therefore perfectly safe. In incising the common duct its peritoneal covering should be protected as far as possible and included in the grasp of the suture. The suture material should be of the finest possible character—size 000 catgut is satisfactory. The edge of the incision should be inverted and the suturing should be accurate. Such a line of suture is as safe in the common duct as in

the ileum and requires no further attention. It is as illogical to place a drain in contact with or in proximity to this line of suture as to do so in the case of intestinal suturing. The common duct functionates as the best drainage tube to be had and carries the bile to its normal place in the intestine. The abdomen should be closed without drainage as in cholecystectomy.

The advantages of closing the abdomen without drainage in gall tract operations are those of the avoidance of drainage anywhere. Primary union without infection makes for a more rapid recovery with fewer postoperative complications, fewer postoperative adhesions and a much shorter stay in the hospital.

HOW IS THE OVERWORKED GENERAL PRACTITIONER TO USE INSULIN?*

RUSSELL M. WILDER, M.D.

Division of Medicine, Mayo Clinic

Rochester, Minnesota

In his enthusiasm for elevating medicine to a high scientific plane, the specialist, surrounded by elaborate hospital and laboratory facilities, often fails to realize that the general practitioner, omniscient and omnipotent though he must be, is becoming bewildered in the maze of new and rapidly multiplying technical procedures.

The dietetic management of diabetes is very complex and the successful use of insulin demands accurate diets rigidly adhered to. The publications on insulin that have appeared to date have been addressed for the most part to the specialist, but it is the overworked family doctor with little experience with diabetes, and little laboratory equipment, who must treat all but a small fraction of the diabetics of the country and, if insulin is to be of benefit to the multitude, he must be supplied with simple dietetic directions which he can follow with a minimum of special effort. It was with this idea in mind that this paper was prepared.

THE EFFECT OF OVERDOSAGE, INSULIN SHOCK

Word has come to my ear of practitioners who have been giving insulin without any attempt at accurate control, either of dosage or diet; also of physicians who have discharged their patients,

*Read before the Southern Minnesota Medical Association, Faribault, June, 1923.

after giving a few insulin injections, with the assurance that a "cure" had been effected. Such practices, if due to ignorance, are deplorable; if wilful, constitute treason to medicine of the kind that weakens the confidence of the people in the profession, and drives them into the clutches of the cultist, the chiropractor, and the quack.

It must be remembered that insulin is not an innocuous placebo, like many of the endocrine products with which we have been deluged of late, but a powerful drug. Its improper use, therefore, is as dangerous as would be that of morphin. The estimation of dosage is, moreover, more difficult than in the case of morphin, because it involves not only the amount of insulin, but also the amount of food sugar which is to accompany the insulin into the centers of metabolic activity. Insulin and food must be nicely balanced, for the reason that when inadequate glucose is available, insulin provokes a condition which simulates surgical shock in some respects, and from which the patient may not recover. We have had two near-fatalities and are convinced of the serious danger that confronts the unfortunate patient applying for treatment to a careless or ignorant physician.

The symptoms of insulin shock* are characteristic. The first abnormal sensations are fatigue, drowsiness and anxiety. Then appear tremors, sweating, rapid heart action and dyspnea. Spontaneous recovery may occur provided the disbalance between the dose of insulin and available glucose is not too great; otherwise delirium, convulsions and death can only be prevented by the prompt administration of glucose as an antidote.

THE REQUIREMENTS FOR SUCCESSFUL USE OF INSULIN

In order to avoid such serious accidents, the physician must balance injected insulin with food

of known glucose value, and in this connection he must take into account that not only sugars and starches, but also to a less extent albumins and fats, are converted in the body to glucose. The glucose value of a mixture of food, according to Woodyatt, consists of the sum of its carbohydrate, 58 per cent of its protein, and 10 per cent of its fat. Thus if we are to know how much glucose our patient is getting, we must weigh his food and we must plan diets to contain precise quantities of carbohydrate, protein, and fat. This involves the use of accurate scales for weighing food, available tables of food values,* and a certain amount of planning, but there is nothing in this that is too complex for the little eight and ten year old patients in our hospital diabetic class. There are further considerations of importance, a limit, for instance, in the reduction of the carbohydrate quota, beyond which it is not safe to go. Adams and I have introduced some charts which materially simplify the necessary calculations involved in adjusting diets for patients of different sexes, ages, and weights. However, I believe that still further simplification is desirable and am, therefore, proposing the following procedure.

ROUTINE PROCEDURE FOR ADULT PATIENTS

Assume a body weight about 10 per cent below what would be normal for the patient's height.** Plan the diet to contain 1 gm. of carbohydrate, 1 gm. of protein, and 2.5 gm. of fat for each kilogram (2.2 pounds) of the assumed body weight.***

If food tables and a food balance should not at once be available, the following milk, cream, and egg-albumin mixture will answer until they can be

*Suitable scales may be obtained either from John Chatillon and Sons, New York City, or from the Chicago Dietetic Supply House, 1750 West Van Buren Street, Chicago, Illinois. Very satisfactory and reliable food tables are contained in Bulletin 28, U. S. Department of Agriculture. This publication can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., ten cents in coin to be included with the order.

**Joslin has prepared a card which contains a condensed table of the normal height-weight standards of the Actuarial Society of America. These are published by Thomas Groom and Company, 105 State Street, Boston, Massachusetts, and are for sale by the publishers.

***Diets arranged in this simple manner satisfy Woodyatt's diet formulas within the limits of error of hospital methods and adjust the fatty acid and glucose in the weight ratio 1.5:1. The glucose value of the proposed 1, 1, 2.5 diets is twice their carbohydrate minus 10, and their fuel value is 30 calories for each kilogram of body weight, which is adequate for the metabolic demands of the patient at rest. After the preliminary period of treatment and provided no complications exist, it is safe to increase the fat quota by an additional gram of fat for each kilogram of body weight, thus making the proportions, carbohydrate 1 gm., protein 1 gm., and fat 3.5 gm. for each kilogram and increasing the calories to 40 for each kilogram. The justification for these higher fat diets has been discussed elsewhere.⁷

*The term "insulin shock" is preferred to the more commonly used expressions such as "insulin reaction," "hypoglycemic reactions," and "hyperinsulinemia." The effect of overdosage of insulin is distinctly shock-like, and although some of the symptoms seem to be due to the "reaction" of the organism, in the strict sense of the word, the complete clinical picture provoked by excessive insulin is not properly described as a reaction. The initial symptoms of weakness, drowsiness, and hunger, and the final effects, delirium, convulsions, coma and death, are the result of hypoglycemia. On the other hand, the organism does "react" to such hypoglycemia, and spontaneous recovery is brought about in many cases as a result of this "reaction." The symptoms hyperpnea, tachycardia, tremor, and sweating may be attributable to the "reaction," and in fact, as Boothby and I have suggested, the character of these symptoms strongly suggests that the protective "reaction" consists in part of a spurt of epinephrin from the patient's own adrenal tissue. It seems desirable to attempt a distinction between the action of the drug and the reaction of the organism. The term "insulin shock" covers the entire syndrome and includes both action and reaction.

it advisable to attempt to prevent this by a late afternoon or evening injection, fearing the possibility of shock at a time when it might not be recognized early enough to prevent disaster. In a patient on a properly balanced diet and insulin régime, the amount of this nocturnal glycosuria is very small and may be disregarded with impunity. The dose of insulin should be large enough to keep the urine sugar-free during the day. Hence, continuous collections of urine, impracticable except in well-managed hospitals, may be omitted and attention concentrated on a single specimen passed between 7:00 and 9:00 p. m. This should be sugar-free. Barborka has discussed the behavior of the blood and urine of patients receiving single and multiple divided doses of insulin.

THE TREATMENT OF CHILDREN

It is common knowledge that the diabetes of children is the most rapidly progressive form of the disease. I have seen a child eighteen months of age die in diabetic coma within a week of the appearance of the first symptoms of diabetes, and a number of such stormy cases are reported in the literature. The treatment of young children, even

with the help of insulin, presents difficulties which are not encountered in adults:

Children are very susceptible to acidosis and tolerate poorly high fat and low carbohydrate diets. Acetone bodies may accumulate very rapidly and precipitate coma within a few hours.

Children are more highly susceptible than adults to infections, such as measles, mumps, whooping cough, chicken-pox, rhinitis, tonsillitis, and bronchitis. Such complications, as is explained below, intensively aggravate an existent diabetes.

Children tolerate undernutrition poorly; their food requirements and particularly their protein requirements are high, and consequently the doses of insulin necessary are large in proportion to their body weight.

In children the volume of blood and other tissue fluids is small; consequently the amount of free glucose available for buffering insulin injections is small, and such injections are more likely to provoke severe shock than in the case of adults.

In order to avoid the pitfalls of acidosis on the one hand, and insulin shock on the other, Geyelin has allowed a moderate glycosuria in all his juvenile cases. In the earlier stages of his work, when, with others, he was making an effort to maintain a constantly sugar-free urine, he encountered relatively frequent and sometimes severe symptoms of insulin overdosage; whereas since his later plan was adopted he has had evidence of insulin shock mildly in only one case. Our experience in the treatment of seventeen children under twelve years of age entirely corroborates that of Geyelin, and we believe with him that, for the time being at least, it is unwise to attempt to entirely avoid glycosuria. It is much more important to nourish the little patients back to a good weight and strength, and to guard them against the danger of acidosis; apparently this may be accomplished very satisfactorily despite a persistent low grade glycosuria.

Our procedure in the cases of children with uncomplicated diabetes has been to give a diet containing 2 gm. of carbohydrate for each kilogram, 2 gm. of protein for each kilogram, and fat sufficient to provide adequate calories. We estimate that the calorie requirement of the child at rest will vary with the age from 50 calories for each kilogram, for an age of eight or ten, to 100 calories for each kilogram for an age of two or under. A six year old boy, weighing 20 kg., might receive, for example, 40 gm. of carbohydrate, 40 gm. of protein,

TABLE 1

ABBREVIATED FOOD TABLE

	Carbo- hydrate, Protein, Fat, per cent per cent per cent		
Green vegetables	3	1	0
Pumpkin, squash, beets, onions, carrots	6	1	0
Potato, green corn, beans or peas shelled	20	4	0
Oranges, strawberries, peaches.....	10	1	0
Walnuts, meats of.....	16	17	63
Whole milk	5	3	4
Skimmed milk	5	3	0
Cream, 20 per cent fat.....	5	3	20
Buttermilk	5	3	1
Butter	0	1	85
Cheese, American	0	29	36
Cheese, cottage	4	21	1
Eggs, each	0	6 gm.	6 gm.
Egg white (one)	0	4 gm.	0
Egg yolk (one)	0	2 gm.	6 gm.
Meat, lean	0	20	10
Bacon, lean	0	16	43
Bacon, fat	0	10	67
Fish: Halibut, lake trout, perch, whitefish	0	18	5
Fish: Salmon, fresh or canned....	0	22	13
Lard, olive oil, crisco.....	0	0	85 to 100

Weigh foods before cooking

and 100 gm. of fat, which could be made of the following milk, cream, and egg-albumin mixture:

500 c.c. (16 $\frac{2}{3}$ ounces) 20 per cent cream.

300 c.c. (10 ounces) skimmed milk.

Whites of 4 eggs.

If such a mixture is used at first, it should be substituted by other foods as soon as food scales are available and the use of food tables has been mastered.

Insulin is started in 3 unit doses before breakfast, a careful watch being maintained for symptoms of shock. The dosage is gradually increased 3 units at a time until acidosis is thoroughly controlled and the sugar in the single specimen taken between 7:00 and 9:00 p. m. is reduced to a trace (green precipitate filling the tube in Benedict's qualitative test for glucose in the urine). When more than 10 units are necessary each day, we have been dividing the dose and giving one half before breakfast and the balance immediately after the noon meal.

THE TREATMENT OF INFECTIONS

When a diabetic patient catches a bad cold, or develops bronchitis, pneumonia, furunculosis, or any of the infections, his diabetes at once assumes a greatly increased severity. The effect of bacterial toxins seems to be to neutralize in part the action of the internal secretion of the pancreas and, sugar failing to oxidize, the fats burn incompletely and the acetone bodies put in their appearance. Before the discovery of insulin, such complications often meant death in diabetic coma, but fortunately today the situation is different; such coma deaths have become avoidable and are, therefore, inexcusable. Up to June 1, 1923, we have treated with insulin thirty-four patients with severe infection of one kind or another, and while three patients were lost, one with pneumonia, one with carbuncle, and one with pyelonephritis, they died from toxemia, the urine and blood being free from acetone and diacetic acid.

When infection complicates diabetes, it adds greatly to the difficulty of management. Often the patient is too sick to eat and, therefore, it is hard to know how much insulin he will tolerate. Furthermore, the necessary dose of insulin may be large even if the patient is eating little or nothing. We are satisfied that in uncomplicated cases of diabetes, on proper diets, one unit of insulin results in the metabolism of about 1.7 gm. of sugar. However, in the presence of complications, and par-

ticularly with bacterial infection, the potency of the unit may be appreciably less than this, fluctuating from day to day with the degree of toxemia. We have made it a rule, therefore, in such cases to leave a small amount of sugar in the patient's urine so that we may be assured that the blood sugar is high enough to buffer improperly chosen insulin doses. Attention is centered on the control of acidosis. The diet is planned to consist of soft foods which the sick man can eat: fruit juices, milk, cream, eggs, soft cereals, and possibly a little toast, allowing 1 gm. of carbohydrate, 1 gm. of protein, and from 1 to 2.5 gm. of fat for each kilogram of weight. Doses of from 10 to 20 units of insulin are injected at 8:00 a. m., 12:00 m., 4:00 p. m., and 8:00 p. m. The urine is examined repeatedly, and every specimen passed is tested for diacetic acid. Positive diacetic acid reactions are indications for increasing the doses of insulin, negative reactions are indications for omitting an injection, or at least reducing the size of the next dose. When evening injections are used, the patients must be closely watched at night for symptoms of insulin shock.

THE TREATMENT OF DIABETIC ACIDOSIS AND COMA

Up to June 1, 1923, we had ten cases of coma or near coma in which insulin was used. All but one patient recovered. This is a rather better average result than has been obtained in other clinics, and is probably to be explained by the fact that we do not see as large a proportion of the very severe cases of deep coma as do those who are located in denser centers of population. Nevertheless, we have had some patients in very deep coma with high blood fats and very low alkali reserves. The patient who died expired from acute heart failure twenty minutes after receiving 20 units of insulin. Our procedure in this emergency has been formulated by Barborka in the following set of rules:

1. Immediate and absolute rest in bed under constant supervision of special nurses.
2. Artificial warming with blankets and hot water bottles.
3. Lavage of the stomach with warm 5 per cent solutions of sodium bicarbonate.
4. Lavage of the lower bowel by an enema of warm soapsuds.
5. Catheterization of the urinary bladder.
6. The administration of fluids: by mouth, hot clear coffee, fat-free bouillon, hot water; by rectum, warm physiologic saline as a retention enema.

Adults receive one quart of fluid every six hours; children, one half this amount.

7. Support of the heart by digitalis; hypodermic injections of digifolin, 1 c.c. every hour for three or four doses.

8. Administration of insulin, 30 units subcutaneously at once, buffered with 150 gm. of orange juice by mouth. After three hours, another 150 gm. of orange juice are given. This dose of insulin and the orange juice are repeated every six hours until the urine is free from diacetic acid.

In case the patient is unable to swallow, 15 gm. of glucose in 5 per cent solution are given every three hours by retention enema. In extreme conditions larger doses of insulin may be used, and intravenous injections employed as recommended by Campbell, and others. These injections are accompanied by the intravenous injection of glucose of greatest purity, 1 gm. of glucose for each unit of insulin. Twenty per cent glucose solutions prepared with pure freshly distilled water may be used for such injections.

Joslin and others recommend the prompt subcutaneous injection of 1 liter of physiologic saline solution in these emergencies. Woodyatt advises giving sodium bicarbonate by mouth and by retention enema. We have seldom found it necessary to use alkalis since we have had insulin, but are convinced of its value when insulin is not available.

It is of the greatest assistance to have frequent observations of the blood sugar and the carbon dioxide capacity of the blood in cases of severe acidosis. Nevertheless, one can do without such examinations by noting carefully the acetone odor of the breath and examining each single specimen of urine for diacetic acid. Unless urination is unimpeded, the bladder should be catheterized from time to time. Insulin is administered in increasing doses until the odor of acetone can no longer be detected on the breath, or until the diacetic acid reaction of the urine is negative. After the patient has recovered from acidosis, his treatment can be continued according to the routine described above.

SUMMARY

I have outlined a method for planning diabetic diets and treating patients with insulin which is in accord with recent advances and approved practices, and yet is simple enough to be immediately available to the busy practitioner whose equipment for laboratory control is minimal. More precise methods are desirable in institutions and for spe-

cialists, but the majority of patients with diabetes will never be able to consult the specialist, and the home physician must be prepared to treat them to the best of his ability. The indispensable equipment includes a good food balance, a table of food values, Benedict's or Haines' solution for qualitative determination of urinary sugar, and a 10 per cent ferric chlorid solution for determination of diacetic acid in the urine.

Treatment can be started with simple milk, cream, and egg-albumin mixtures, the formulas for which are given, but for the subsequent conduct of the case the physician must familiarize himself with the use of food tables and the planning of diets of known composition. Also he must so train his patient that the latter will be able to continue an accurate diet, make his insulin injections properly, and test his urine for sugar and diacetic acid. The instruction of the patient in these matters is vital, and the treatment of a case of diabetes is not completed until this has been accomplished. Insulin is not a cure for the underlying pancreatic fault, but it does enable the well-trained diabetic to maintain normal bodily and mental vigor.

BIBLIOGRAPHY

1. Adams, S. F.: A consideration of food mixtures for diabetic patients and a method for calculating diets. *Med. Clin. N. Amer.*, 1923, vii, 13-24.
2. Barborka, C. J.: The use of insulin in the treatment of diabetes. *Med. Clin. N. Amer.*, 1923, vii, 25-51.
3. Boothby, W. M., and Wilder, R. M.: Preliminary report on the effect of insulin on the rate of heat production and its significance in regard to the calorogenic action of adrenalin. *Med. Clin. N. Amer.*, 1923, vii, 53-56.
4. Campbell, W. R.: Ketosis, acidosis and coma treated by insulin. *Jour. Metab. Res.*, 1922, ii, 605-635.
5. Geyelin, H. R., Harrop, F., Murray, M. F., and Corwin, E.: The use of insulin in juvenile diabetes. *Jour. Metab. Res.*, 1922, ii, 767-792.
6. Joslin, E. P.: The routine treatment of diabetes with insulin. *Jour. Am. Med. Assn.*, 1923, lxxx, 1581-1583.
7. Wilder, R. M., and Winter, M. D.: The threshold of ketogenesis. *Jour. Biol. Chem.*, 1922, lxi, 393-401.
8. Wilder, R. M.: Optimal food mixtures for diabetic patients. *Jour. Am. Med. Assn.*, 1922, lxxviii, 1879-1884.
9. Wilder, R. M., Boothby, W. M., Barborka, C. J., Kitchen, H. O., and Adams, S. F.: Clinical observation on insulin. *Jour. Metab. Res.*, 1922, ii, 701-728.
10. Wilder, R. M., Foley, Mary A., and Ellithorpe, Daisey: A primer for diabetic patients. 2 ed. Philadelphia, Saunders, 1923.
11. Woodyatt, R. T.: Object and method of diet adjustment in diabetes. *Arch. Int. Med.*, 1921, xxviii, 125-141.

THE SYMPTOMS AND SIGNS OF ACUTE LOBAR PNEUMONIA*

CHARLES LYMAN GREENE, M.D.

St. Paul

The diagnosis of acute lobar pneumonia usually presents no difficulties; yet in certain instances it is difficult or impossible.

From the standpoint of symptoms, there are two important types of this disease: (1) the sthenic, (2) the asthenic (senile, complicating, or terminal).

Furthermore one must consider with relation to physical signs: (1) the common form of frank development; (2) the so-called "massive pneumonia" with blocking of the larger bronchi, temporary or persisting; (3) the variety characterized by gradual development from the hili to the periphery, i.e., central pneumonia.

The Onset.—In its typical form acute lobar pneumonia comes on abruptly with few or no prodromal symptoms and is initiated by decided chilliness or rigor, single or repeated, varying in duration from a few minutes to several hours. In 40 per cent or more of the cases, however, a definite chill or even a period of chilliness is lacking and fever with or without pain in the chest is the first definite symptom. Furthermore, though usually trifling or absent, prodromal symptoms may be present for several days, and, of these, the commonest are coryza and bronchitis, sore throat, tonsillitis, muscle and joint pains and anorexia.

In the asthenic type of pneumonia no symptoms of abrupt onset or marked character occur and the disease often escapes detection.

Pain.—One of the earliest and most constant symptoms (90 per cent) of the sthenic type is pain in the chest, obviously pleural in origin, frequently showing diaphragmatic involvement and preceding by hours any chill or marked rise in temperature. Hence the frequent, referred, abdominal pain and tenderness in either the upper or lower abdominal segments, associated oftentimes with muscle-rigidity, which has led to many a mistaken abdominal section. A like pain may occur in the neck and arms.

Pain in this disease may influence posture, leading the patient sometimes to lie on the side affected instead of assuming that dorsal recumbency usually

elected, and forces the patient to suppress his cough, breathe superficially and seek to avoid yawning, laughing or sneezing.

In the asthenic and centrally developing types, this notable feature of the clinical picture may be wholly lacking.

It should be noted that a sudden rather than gradual disappearance of pain suggests the occurrence of pleural effusion.

Fever.—The "cold" stage of pneumonia is succeeded rapidly by one that is "hot," subjectively and objectively, the body temperature rising rapidly to 103° to 104° or 105° F., with all of the accompanying symptoms of high fever, including headache, which is peculiarly constant in cases of the sthenic type and often severe and troublesome.

The fever persists ordinarily until crisis in a continuous form appears, with diurnal variations which seldom exceed one degree Fahrenheit.

In certain cases, however, the fever is strikingly remittent throughout. In asthenic (senile, terminal) pneumonia it may be wholly absent or trivial, but, sometimes, is the most outstanding symptom of an obscure clinical picture.

The primary rise may be gradual, not abrupt or rapid, and forty-eight or even seventy-two hours may elapse before it is fully established.

An abrupt rise may occur during the active stage and may be without clinical significance or it may indicate the involvement of another lobe, the onset of a complication, or the imminence of crisis.

An abrupt fall characterizes the onset of crisis; but it must be remembered that this rapid drop in temperature, if of favorable significance, should be associated with a marked, decided and obvious betterment of the general condition of the patient. This being absent, the fall of the fever must be considered as a danger signal accompanying or portending collapse, and some serious complication should be suspected and sought.

The duration of the acute febrile period varies from twenty-four hours to two weeks or more—crisis or lysis beginning most commonly between the fifth and eighth day of the disease. The old idea that the crisis falls upon the odd-numbered days of the disease is a fallacy.

When crisis is postponed for twelve days or more, termination by lysis usually occurs.

A sudden drop in temperature, followed by a rise and unassociated with symptoms of collapse, is termed a pseudo-crisis and may precede the

*Presented in Symposium on Pneumonia, St. Paul Clinic Week, January, 1923.

critical fall by a period varying from a few hours to three days. It occurs in about 10 per cent of all cases.

Respiration.—Hurried, shallow and obviously painful breathing is the typical finding in sthenic cases, but is less evident in those of the asthenic or centrally developing type in which the respiratory rate may be but slightly affected and all signs of distress absent.

The normal pulse—respiration ratio of $4\frac{1}{2}$ to 1—may in the common type of lobar pneumonia be converted into 3 to 1, or even 2 to 1, as the respiratory rate rises to thirty, forty, or even sixty or more to the minute—the first figures being the usual ones.

A sharp distinction must be drawn between hurried breathing, painful or not, and actual dyspnea. The latter is a serious symptom indicative, in most instances, of extreme cardiac weakness or the presence of a large pleural effusion. Due allowance must be made for extreme nervousness which may cause a false dyspnea.

The painful breathing of the initial stages usually subsides gradually within a period varying from a few hours to three days, but with persisting consolidation the rate remains rapid. Pleural friction may or may not be detected. Excessively rapid respiration, sixty or seventy to the minute, is a grave sign, though recovery may occur. Expiratory grunting is very common and quite significant and characteristic.

The Pulse.—Small, hard and rapid during the stage of rigor or decided chilliness (if these symptoms be present), the pulse becomes full and bounding with the rising temperature, attaining a rate of from 90 to 110 in the ordinary case.

The onset during the active stage of a pulse excessively slow, irregular or extremely rapid, is ominous, and decided weakening, especially if associated with deepening cyanosis, is one of the gravest symptoms encountered in this disease. Any case showing a pulse rate at or above 130 is to be regarded as a grave one; with rate 140 or above the prognosis is bad.

Blood Pressure.—The blood pressure ordinarily is that of the individual in a state of health. Gibson's dictum as to the gravity of the case which shows a systolic reading lower than the pulse beats per minute is in general correct, for obviously an extremely high pulse rate 140+ or a very low sys-

tolic pressure are in themselves serious symptoms. A sudden drop in the systolic pressure is ominous.

Cough and Sputum.—The cough at the onset dry, harassing and unproductive, at times paroxysmal, painful and exhausting, is voluntarily suppressed as much as possible.

The sputum is scant, mucoid, and usually streaked with blood.

As the disease progresses, the cough becomes ordinarily less urgent, and the sputum, rusty from the diffusion of altered blood pigment, is peculiarly viscid and tenacious, sticking to the side of the sputum cup inverted and tending to cling to the lips of the harassed patient. The sputum may be frankly bloody (in which case one thinks especially of the possibility of pneumonic phthisis) or prune-juice like, which suggests the presence of pulmonary edema. With the onset of resolution the cough is eased and the creamy mucopurulent sputum is easily raised and ejected.

Sudden relief of cough in the early stages always suggests the oncoming of a complicating pleural effusion.

It must be remembered that cough and sputum may be wholly absent in senile, complicating or terminal pneumonias of the asthenic type.

Outward appearance of the patient.—In the sthenic type of pneumonia the face of the victim is pallid and cyanotic if seen during a rigor, flushed, if fever has come on. As the process in the lung develops the cheek corresponding to the affected side may show a deeper flush than its fellow.

The eyes are bright, the expression anxious. Labial, nasal, facial or even anal herpes may appear—the patient appears sick and distressed, but the decubitus is active whether, as is usual, it be dorsal or, by reason of chest pain, lateral.

These signs one and all may be absent in asthenic cases.

Headache, anorexia, and flatulence are common, and meteorism, if excessive, may add greatly to the gravity of the case and seriously affect the already toxic and over-burdened heart.

Hiccough, when present persistently, calls for immediate relief by hyoscin-hydrobromide and morphine, as it constitutes one of the most fatal of the occasional complications of acute lobar pneumonia.

The Blood.—During the acute phases no anemia is detectable; but after resolution is completed a reduction of about 10 per cent in red cells and a

somewhat greater loss of hemoglobin may be determined.

The presence of a leucocytosis in which the polymorphonuclear cell constitutes 80 per cent plus of the white count is one of the earliest, most dependable, and most valuable confirmatory signs of acute lobar pneumonia. The "polymorph" increase appears within a few hours after the onset and falls gradually to normal during resolution—more slowly if the termination is by lysis rather than crisis.

If the anticipated progressive drop does not appear, a complication must be suspected, empyema being that most commonly found.

If, however, though the white count remains high, the polymorph predominance in the count is vitiated by an increase of lymphocytes and eosinophiles it is probable that delayed resolution is accountable.

Normal counts occur sometimes with mild infection, but, in general, a low count or a very high one means danger. Counts running between 20,000 and 30,000 seem to be most favorable. Counts of 40,000 are not rare nor especially unfavorable in sthenic individuals and counts as high as 100,000, with recovery, are reported. A gradual rise in the count as the disease progresses is a favorable sign.

In the asthenic types a leucocytosis may be present and of great value and significance. Unfortunately, however, a considerable percentage of these show a leucopenia or normal count.

In central pneumonias a high leucocyte count is a valuable corroborative symptom when present.

During the stage of resolution, nucleated red cells and myelocytes may be found in the blood, but are of no special importance or significance.

Blood Cultures.—Whenever possible a blood culture should be had and it should be remembered that pneumonococcus bacteremia is of serious import, such cases showing a mortality rate reaching or exceeding 50 per cent.

Sputum cultures should also be made, but only from such sputa as come from the deeper air passages. The establishment of the type of pneumococcus present has an important bearing upon both prognosis and treatment.

The Urine.—The urine is scant, high-colored, contains usually a trace of albumin and an occasional hyaline or finely granular cast and in a certain percentage of cases a substance which gives a

precipitin reaction with the antiserum specific for the given case.

A very important and valuable though neglected sign is the striking diminution or total absence of urinary chlorides. A very simple test suffices for the determination of their absence or diminution.

Physical Signs.—The facies, the character of the breathing and the posture have been described.

Early in the disease the only decided limitation of respiratory movement of the chest will be that attributable to pain. Later, as consolidation develops, limitation of respiratory excursion may be marked over the area of consolidation but not necessarily over the whole of the affected side if a lower lobe only is involved, as in that case the movements of the upper chest on the affected side may be exaggerated.

Palpation confirms inspection with respect to abnormalities of chest movement and is the more dependable method.

In very rapidly developing consolidation, increased tactile fremitus may be detected within twelve to twenty-four hours; within these periods usually, however, there is little change.

Percussion reveals at the outset nothing whatever. A few hours later the note may be hyperresonant over the area of lung affected, this being gradually replaced by dullness, usually pronounced and associated with a marked sensation of resistance.

Dullness persists at and after crisis until resolution is well under way and the return of normal resonance is delayed ordinarily for a week or more though the change from marked dullness to relative resonance may be apparent in twenty-four, forty-eight or seventy-two hours, or even a less time.

In three cases observed by your essayist during an influenza epidemic frank and complete consolidation of an apex appeared and wholly disappeared within twenty-four hours. Each of the three cases was associated with chill, high fever and a bloody dysentery of but a few hours' duration. Chest pain, cough and sputa were absent.

Hyperresonance is quite commonly observed over the unaffected lobes of the pneumonic lung and along the line of advance of consolidation.

Auscultation.—During the first few hours of the attack a significant suppression of the breath sounds over the affected area is commonly encountered and is of great significance. In other cases the sounds may be harsh or distinctly broncho-vesicular. It is

in this stage that one may hear at the end of forced inspiration, and then only, the crepitant râle—a dry, high pitched, extremely fine delicate crackle, occurring usually in showers. Unlike the crepitant râle of atelectasis it persists after repeated forced respirations and ordinarily is heard only unilaterally, save in those instances where two corresponding lower lobes are involved simultaneously. It disappears when full consolidation of the lobe affected is achieved and is heard therefore only during a period varying from a few hours to one or two days, until resolution commences, when it may reappear as the *crepitatio redux* together with subcrepitant and other coarser râles.

When the stage of actual consolidation is reached, the breath sounds are typical and unmistakable. Both inspiration and expiration are tubular, i.e., high pitched, intense, and equal in duration. Bronchophony, pectoriloquy and sometimes egophony are present and tactile fremitus is markedly increased. Careful auscultation of the upper axillary spaces must never be omitted and it must be remembered that the first significant signs in an obscure case may be audible only at the inferior angle of the scapula or the apex of the axillary space.

Auscultation of the heart is extremely important. The second pulmonary sound should be markedly loud and exaggerated, the first sound at the apex clear, the aortic second well defined.

Only the short duration of acute lobar pneumonia and the happy tendency to infection by pneumococcus types of lesser virulence save the heart in most, but by no means all, recoverable cases, from serious damage or permanent, long-continued weakness. The frequency of involvement in fatal cases will be dealt with later. Both by physical obstacles and by toxemia its muscle is seriously hampered and threatened. Dilatation is a common event and this is particularly true of the right heart.

In cases watched and guided carelessly in convalescence persisting dilatation and varying degrees of myocardial insufficiency may be present for weeks or months.

A lack of pronounced accentuation of the second pulmonary tone, or progressive diminution of its intensity, are warning signals of acute extreme dilatation. A lessening of the first tone at the apex suggests a weakening of the heart as a whole, its tones being markedly affected by the high grade toxemia characteristic of the disease.

So-called functional murmurs are of similar sig-

nificance, indicating tonus deficiency, and are very common in severe or prolonged attacks.

Endocarditis and pericarditis are not uncommon and the fact that when a true endocarditis develops in lobar pneumonia it is often of the malignant ulcerative type must be held in mind.

Endocarditis is found in about 15 per cent and pericarditis in 12 per cent of fatal cases coming to autopsy, but is often overlooked during the attack.

Cardiac failure may occur early, more often during the height of the attack, not infrequently at the time of crisis (especially in cases of arrested tuberculosis), and occasionally in convalescence, when as a rule too little care is taken to safeguard the patient.

A pulse above 130 during the acute attack, a low or falling blood pressure, arrhythmia, deepening cyanosis, subjective weakness or exhaustion, increasing pallor, progressive or abruptly established dyspnea and cooling or cold extremities are ominous signs.

As a matter of fact the condition of the heart is a vital factor in the outcome of a case of acute lobar pneumonia and it must be watched closely from onset to the end of convalescence.

Furthermore the utmost care should be taken to conserve heart strength during the attack and to avoid pushing the patient ahead too rapidly after the crisis has occurred and resolution is under way.

It is not only unwise but wholly unnecessary to raise up the patient while making the physical examination of the chest—yet this dangerous error is constantly committed.

The pneumonia patient should not be permitted to sit up for any purpose during the acute stage or at and immediately after the crisis.

If delirium is present the patient must never be left alone for a moment, lest he leap out of bed and subject a weak heart to fatal overstrain.

The condition of the heart sounds should be determined at every visit and from start to finish and from visit to visit the attending physician should record as accurately as possible in the individual case the position and character of the apex beat (point of maximum impulse) and the right and left borders of the heart.

During and after convalescence thorough and painstaking examinations are imperatively demanded.

Asthenic, senile, complicating and alcoholic pneumonias.—In these we deal with what is at best

in many instances only a fragmentary clinical picture. Practically all important localizing and definitive symptoms may be absent and one's chief reliance must be placed upon the knowledge of the frequency of lobar pneumonia as a cause of exitus in individuals coming under these heads and seek by thorough and comprehensive methods to establish its presence.

Even though the evidence is fragmentary the nature of such shreds of testimony as may be obtained is usually sufficient when combined to yield reasonable proof of the nature of the ailment.

Massive Pneumonia.—This condition, fortunately rare, offers less difficulty in diagnosis than might at first thought be assumed. Of all the signs of pneumonia it lacks only those typical of consolidation with open bronchi. The absence of pleural effusion is determined readily by the needle and the diagnosis doubtless is missed less frequently than is that of central pneumonia.

In certain cases of pseudo-massive pneumonia a few coughs will remove blocking secretion and establish the classical auscultatory signs.

Central Pneumonia.—In the ordinary form this presents the usual symptoms of acute lobar pneumonia, but for several days lacks the physical signs. Indeed, in some instances resolution appears before the consolidation reaches the surface of the lung. The diagnosis is not difficult if the collective symptoms apart from the physical signs are outstanding; as is often the case.

In closing I wish to say that the chief factors in the accurate diagnosis of obscure lobar pneumonia are: first, a due appreciation of its frequent departures from the classical picture; second, its frequency as a masked form in old age, chronic exhausting disease, alcoholism and as a complication of other acute infections; and, third, a thorough and painstaking examination which includes a white blood count and the simple and readily achieved determination of the urinary chlorides.

TREATMENT OF PNEUMONIA*

H. T. NIPPERT, M.D.
St. Paul

We have used our five senses more or less in the diagnosis of our case. Now in treatment let us make use of the sixth sense, the one we as physicians

*Presented in Symposium on Pneumonia at St. Paul Clinic Week, January, 1923.

should develop more and more, "common sense." How wonderful it would be if for pneumonia, a specific disease, we had a specific remedy which we could employ with the same confidence, benefit and assurance of results that we do antitoxin in diphtheria. For twenty-five years the work in this line has been going on and on, and that, up to date, it has not produced anything absolutely definite and reliable is proven by the still continued efforts of the research and experimental laboratories and its co-workers, bringing out something new every now and then for trial. In the December, 1922, number of the American Journal of Medical Sciences, for instance, a paper is published by Dr. Lewis Connor of New York on a serum-free solution of pneumococcus antibodies as tried out by him and his assistants in the New York Hospital. Again, according to the Annual Reports of the United States Public Health Service for 1921-1922, it appears that in the laboratories connected with Bellevue Hospital, New York City, a group working under the direction of Dr. Russell L. Cecil, special expert, have continued attempts to produce effective vaccines and serums, and have attacked the mechanism of infection. This is a continuing research, and the useful results, if any, that may be had from it cannot be predicted; so we are still at a loss what to use. What has stood the test of time and will prove of benefit? Should we favor or use the pneumonia antitoxin, the vaccines, the bacterins, antigens, serums, serum-free solution of antibodies? A number of well known clinicians seem to be inclined to think that serum in Type I cases gives some benefit. On a recent visit to the eastern hospitals I heard the statement made by one of the chief clinicians in Boston in regard to serum treatment for Type I cases of pneumonia that they had found at the Boston City Hospital the mortality about the same, serum or no serum. If there was any noticeable disadvantage, it was more with the cases who received serum. While in New York the use of pneumonia antibodies solution given subcutaneously in amounts as high as 1,200 c.c. seemed to be the favorite method of specific treatment. A letter of inquiry in regard to the use of antitoxins, antigens, bacterins, etc., sent to a friend and brother practitioner, Dr. Kenneth Taylor, now of New York, brought the following reply:

"You asked me about the treatment of pneumonia in New York. I do not think any of the hospitals are making consistent use of antitoxins or antigens or bacterins. There are a few men who are trying them on selected cases, but

there is no general acceptance of their value. In fact, I think there is less interest in them now than there was four or five years ago. After all, I do not believe there is anything of a medical sort which has particular value in pneumonia except digitalis. In my own service last year at the hospital, we gave tincture of digitalis in two-dram doses, repeated every four hours for four or six doses, as soon as the case appeared. Occasionally, to very sick patients with signs of beginning heart weakness, we gave eight or ten drops of the tincture intravenously. It was certainly very effective at times in steadying a shaky heart. In fact, the reaction was often so prompt that I have a feeling that it was the alcohol in the tincture, rather than the digitalis, which was effective."

Hearst's International Monthly Magazine, January, 1923, contained an exposé of Dr. Abrams, the well known or rather well advertised San Francisco blood expert (?) or whatever you want to call him. The question was, "Why do doctors fall for such stuff?" The author says the medical profession, like any other, has its lunatic fringe, ready to swallow without criticism any bizarre idea so long as it is new. Let us keep away as much as possible from the fringe. We all or rather most of us know and sadly remember how we have fallen for gold and silver mining stock and are still waiting for oil to spout to make us millionaires, fruit lands to reach \$400 to \$600 an acre, to take care of us in our old age, and so forth. Here, at least, we have not done any harm to our patients, but let us be careful not to use new remedies which may, to our chagrin, cost a life every now and then. Personally I shall wait before employing the newer methods until I am convinced beyond doubt that with them I can do better than with the old ones. Still being one of the younger practitioners, I hope that I may see the day when bacteriologists or biochemists will succeed in producing a remedy which will give us better results in the treatment of pneumonia than we have to date.

At the present time how do I care for my pneumonia patients? First I remember that every now and then I see several cases in one and the same family, following each other within a short time; for the disease is infectious and transmissible. As a prophylactic measure I warn the family not to be around the ill one any more than is absolutely necessary; while in the sick-room to refrain from talking much—the tighter they keep the mouth shut the less chance of swallowing germs, and, most important, the more rest for the patient. They are instructed to see that the sputum, laundry, and excretions are properly handled and disinfected. Re-

garding prophylaxis, it must not be forgotten by the surgeon that he can reduce his ether pneumonias by shortening as much as possible the duration of the anesthetic and substituting local anesthesia where possible, particularly when patients have colds, cough, diseased tonsils or infected sinuses. What about prophylactic inoculation at this time? Allow me to refer you to an extensive report by McCoy and Hasseltine of the United States Public Health Service and August Wadsworth (Am. Med. Assn. Journal, Sept., 1922) of experiments made in New York State Institutions representing a population of 38,958 inmates. In summing up their study, they state that the results are far from satisfactory and do not permit the drawing of any definite conclusions; they show that a large number if not an equal number of cases of pneumonia developed after inoculation. Furthermore they show the development in the inoculated group of pneumonias produced by the three types of pneumococcus used in the vaccine (the lipo-vaccine prepared at the Army Medical School in Washington, D. C.).

After all, our efforts are directed to simply assist our pneumonia patient in his fight against the disease, paying particular attention to sustain as much as possible the integrity and strength of his heart muscle and to relieve as much as possible his toxemia until the crisis has passed. To do this he must be put at rest, absolute rest, physical as well as mental, and this is best procured by putting him under the care of a competent nurse. If he does not like his nurse and cannot get along with her do not hesitate to change, get another one who may prove more congenial to him; listen to his complaints, don't pass them over lightly by thinking he is a crank and hard to get along with—nurses are human beings and not infallible. Put him in the most cheerful room, the one which gets the most sunlight, with enough windows to assure a continuous and abundant supply of fresh air; as oxygenation of the blood is very much interfered with, not only on account of the consolidated pulmonary area but also on account of the shallow breathing, the air must be abundant and fresh. The temperature of the room should be between 60 to 65 degrees F. (for the very young and older 70 degrees), but use "common sense"; if pneumonia patients are put out of doors in Florida or California or here during the summer, there is no reason why we should try the same procedure here in Minnesota

during this time of the year or during at least seven months of the year. I have often thought that if I ever had pneumonia and a well meaning brother practitioner should put me out in the cold, I would like to reciprocate in the opposite direction and see him where it is said to be extremely hot. You can get plenty of fresh air in cold weather through one window. Keep your patient warm and comfortable, and don't let him get chilled. One of the thrills of my young life I received when I read an article by our friend and neighbor Dr. George D. Head, of Minneapolis, on Treatment of Pneumonia at Camp Wheeler (published in the Journal of the Am. Med. Assn. 1919). Just to illustrate the fresh air treatment without common sense compared with the one instituted by him with good common sense behind it, I cannot refrain from presenting a short abstract of his report.

The epidemic occurred at Camp Wheeler during October, November, December and part of January, 1919. From October 5th to November 18th open air or open ward treatment was ordered with everything wide open, rain or shine, cold or not, with no screens or blankets before the windows or doors. The soldiers were told to keep their heads close to the open windows so that the cold air sweeping in would be breathed in; if he complained of the draft and cold he was told the fresh air would make him well; no cotton jackets or chest protectors were used and the ward fires were allowed to go out at night; the result of this treatment showed a mortality of 13.6 per cent. While the epidemic was at its height, Dr. Head came and instituted the following radical change in treatment: All windows and doors in the wards were closed, or according to weather or temperature partially closed, and the patients guarded in every way from drafts of cold air, chilling or exposure. All soldiers sick with pneumonia, on outside porches, were ordered moved into wards where they could be kept warm and comfortable; every one was provided with a cotton jacket to keep the chest warm and protect it from drafts and cold air; attendants were warned not to chill their patients while taking care of them—they were kept well covered and tucked in. Fires were kept going day and night, special nurses were provided for the very sick, bathing was allowed only when the wards were warm, and physical examination carried out as quickly and infrequently as permissible—result, mortality 3.2 per cent. Fresh air is the *sine qua non*, but give it so that your patient appreciates it,

enjoys it and is comforted by it, and so that the nurse, instead of taking care of him with cold hands, herself shivering in a sweater, can attend him in comfort.

"Raise the darkened windows, open wide the door, let the blessed sunshine in." It is wonderful to contemplate the advance made in our educational system. Little tots just able to attend kindergarten are early taught the first important principle in treatment of pneumonia and return reciting the above sentence to their families.

Next, be and have others be as cheerful as possible with the patient; mysterious whisperings, a long face, shaking of the head, turning of the eyes upwards as if already watching his flight towards heaven, or telling him "you are awfully sick, old boy, but we may pull you through," is uncalled for in the sick room. You don't need to use the exact French formula so popular at present time, but you can produce one of your own and encourage him, cheer him up, make him feel that you are much interested in him as if he was one of your own family and that he is going to get well; it will help him to take a new lease on life.

The question of food is very important too. It should be almost entirely liquid, consisting of egg-nog, cocoa, buttermilk, tea, orangeade, orange juice with albumen, plenty of water, broths, ice cream, Jello, soups, and, later, soft food. Some years ago late in the evening my telephone rang and, answering, somebody inquired, "What food shall I give my husband?" I replied, "Soft food," and was asked, "What do you mean by soft food? We have soft dill pickles, herring that melts in your mouth, cheese so soft you couldn't chew it if you wanted to, and a lot of other soft stuff." I knew the party very well and she taught me a good lesson, namely, to be more specific when giving orders. Soft food includes milk toast, coddled eggs, vegetable purée, scraped meat (chicken, squab), stewed fruits, well cooked gruels; all should be given in small amounts but frequently. A successful enema and a drastic dose of calomel followed by a dose of magnesium citrate to begin with and continuous attention to free elimination to avoid toxemia as much as possible, is all that is needed in an ordinary mild case of pneumonia. If the toxemia is progressive and increasing, order plenty of water with addition of the acetate, bicarbonate and citrate of potassium to increase diuresis. An entero- and hypodermoclysis of normal salt solution or the intravenous admini-

stration of 250 c.c. of 10 per cent glucose will assist elimination in accordance with common sense. I again emphasize this because I remember while I was intern in a large middle west hospital, we had a case of tapeworm, or rather a man with a tapeworm. You know how we usually eliminate or try to eliminate this long and true friend. We eliminated so lively that we got him head and all, or rather all and head (usually the latter comes last), but as a result of this splendid elimination the patient developed a gastroenteritis and was himself eliminated—"the operation was a success but the patient died," in the parlance of our surgical confrères.

Unfortunately, many pneumonias are not of a mild character and run a more severe course. In these cases how can we prevent myocardial failure, besides giving the patient the already mentioned benefit of proper hygienic conditions? My standby is still digitalis. It does not make so much difference what preparation you use, if you use one of the standard preparations put out by a reliable pharmaceutical laboratory. At times you will have to reinforce or change to other cardiac or respiratory stimulants, such as atropin, alcohol, camphor in oil, nitroglycerin, strychnine, epinephrin, strophanthus and caffein, according to indications. Do not forget that venesection in the plethoric, robust individual with high blood pressure and bounding pulse and tendency to right heart failure will often relieve the dyspnea. Eight to 16 ounces may be withdrawn at one time.

Alcohol in the form of whiskey or brandy, or a wine like Tokay in one-half ounce doses every three hours, or oftener, is an excellent cardiac stimulant, very much appreciated as a rule by our male patients and shunned by very few of our female patients. It can be administered in different ways, cool or warm, or flavored with orange, lemon or lime juice. Some of you who don't believe in prescribing alcoholics, can relieve your consciences by dispensing or causing to be dispensed to your patients such innocent compounds or mixtures as Elixir Simplex which contains only 33 per cent alcohol or that beautiful reddish pink Elixir Lactopepsin 13 per cent (you know tincture Digitalis contains 70 per cent alcohol), Elixir I. Q. S. 20 per cent, Elixir Heroin cum Turpin Hydrate about 45 per cent, or Essence Pepsin 15 per cent.

A favorite prescription of mine, in this connection, for patients (not for me personally) is:

Spirits Ammonia Aromaticus . . . 1½ drachm
Spirits Frumenti 1½ to 1 ounce
Syrup Tolu 1 drachm
Aquæ 2 ounces

Of course everybody knows that alcoholics need larger doses of alcohol and should not be deprived of it.

Pain, so often the initial symptom and at times very severe, must be relieved by opiates, preferably hypodermics of morphin, codein, or pantopon hydrochloride in proper dosage and repeated if necessary. The old time mustard and flaxseed poultice feels at times very agreeable, and keeps the family interested in doing something. An ice-bag applied locally is of value.

Fever will as a rule take care of itself. A temperature of 104 degrees while appearing ominous to the relatives I am rather pleased to observe in the beginning of the illness. This, with a high leucocyte count, indicates to me a good reaction, or shall I call it fighting condition? If the temperature persists we must rely on hydro-therapeutic measures, applied with common sense. An ice-bag to the head, an occasional tepid sponge, or an abdominal pack is called for. If you feel like using an antipyretic drug, a large dose of quinine gr. xv to xx repeated in six to eight hours, is much preferable to the depressing coal-tar products.

Excessive cough, often so exhausting and rest disturbing, can be relieved or ameliorated by sedatives and expectorants.

Edema of the lungs calls for venesection in suitable cases and the use of atropin or oxygen. Sleeplessness, insomnia and extreme restlessness you may relieve by small doses of chloral or adalin or veronal, repeated as required. Complications as pleuritis, endo- and pericarditis, meningitis, nephritis, otitis media, parotitis, infection of the alimentary tract (jaundice), phlebitis, neuritis, must be dealt with in the usual manner.

Watch your patient closely during convalescence. I try to keep him extra warm after the crisis, keep him at least a week in bed after his crisis, longer if there are signs or symptoms that his heart is still feeble. Although a remission of the pulse after the crisis is not to be feared and not a particular danger sign, be sure that he does not get around with any cardiac impairment. Teach him how to take proper breathing exercises and examine his urine occasionally or frequently. If your case on the ninth or eleventh day or any day has had what appeared

to be a crisis, but dullness remains longer than usual or increases after a number of days or a low grade fever remains or returns, if there is continuous loss of appetite, a short unproductive irritable cough, even if physical signs are not absolutely convincing of an accumulation of fluid in the pleural cavity use your hypodermic or aspirating syringe with a fair sized caliber needle and do a trial puncture of the pleural cavity. If negative, repeat at a different level and you will not be so liable to overlook an empyema which if present should be drained. If you have access to the use of an x-ray laboratory make use of it and it too may help to localize a circumscribed empyema or lung abscess which may need surgical interference.

Remember, also, there is such a thing as pneumococcic arthritis, at times suppurative, as well as a pneumococcic peritonitis even without any lung involvement.

Prognosis.—Pneumonia ranks first of all acute diseases as a cause of death in civilized countries. It is said that over one million people die each year from this disease alone. Osler called it the friend of the aged, who through its aid escape the cold gradation of decay; yet more persons die from it between the ages of thirty-five and fifty-five than at any other period. You all remember patients and friends, hard working business and professional men who have been taken off by it before they really could enjoy the fruits of their labor.

The average mortality being 18 to 25 per cent, it has quite a high mortality rate in infants. A very low mortality in children, who generally recover, about a 13 per cent mortality between the ages of twenty to thirty years, it gradually increases to 57 per cent between the ages of sixty to eighty years, in the later years being 80 per cent.

That the rate varies under the influence of different factors and conditions is natural: in individuals weakened by previous disease or insufficient food, and in the very stout it is distinctly more fatal. This is true also for complicating alcoholism, diabetes, endocarditis, myocarditis, arteriosclerosis, influenza, etc.

The prognostication bearing on the individual case must take into consideration not only the resisting power of the patient but also the virulence of the infection. We know that as in other acute infections, we encounter epidemics of unusual violence as well as milder ones. The extent of involve-

ment and location bears somewhat on the prognosis. As a rule the pneumonic infection is confined strictly to the lungs, more often in one base of one lung or even involving the whole of one lung; these cases run the most favorable course, while a migrating pneumonic process or double pneumonia affords a much graver prognosis. Pneumonia of the apex is more serious; a persistent high temperature of 105 degrees or more is a danger sign; so is arrhythmia with increasing pulse rate; a weakening of the first sound and lessened intensity of the second sound or entire disappearance of the same signifies insufficiency of the right ventricle; absence of leucocytosis, a rising respiratory rate, a marked prune juice almost grumous expectoration, are unfavorable signs. Meningitis developing during the course of the disease is almost always fatal. Complications such as kidney involvement, severe concurrent gastro-enteritis, marked albuminuria, pneumonic peritonitis or arthritis, endo- and pericarditis, extensive edema of the lungs complicating pleuritic effusion, lung abscess and empyema, all tend to increase the gravity of the prognosis. Death usually occurs from insufficiency of the right ventricle, as a result of the increased demand to maintain the circulation as a result of pulmonary consolidation as well as the action of the toxemia on the myocardium.

The rule of Gibson that when the pulse rate per minute is higher than the blood pressure in millimeters of mercury the equilibrium of the circulation is seriously disturbed and the prognosis less favorable, seems to hold particularly true.

THE SURGICAL COMPLICATIONS OF PNEUMONIA*

ARNOLD SCHWYZER, M.D.
St. Paul

Of complications in pneumonia there are many. While meningitis and encephalitis may require spinal puncture repeatedly, they are hardly to be called surgical complications of pneumonia. Nephritis and icterus could be considered as potential surgical problems. As pneumococcic nephritis involves exclusively the cortex of the kidney, the exudate causing compression of the glomeruli and

*Presented in Symposium on Pneumonia at St. Paul Clinic Week, January, 1923.

swelling of the cortical parenchyma in general—an extreme case might be benefited by a decapsulation of the kidneys. Icterus in pneumonia must be properly interpreted. It may be due to a duodenitis or other catarrhal swelling of the bile channels in pneumococcic lobar pneumonia, in which case it is not a very grave complication. This is very different from the much dreaded so-called bilious pneumonia, which is not due to the *diplococcus pneumoniae* but to other micro-organisms, which cause a degeneration of the liver parenchyma. This form of pneumonia does therefore not belong to the genuine lobar type, but is to be grouped among the atypical forms. While the first mentioned picture is a simple pneumonia *cum ictero*, the latter is the so frequently fatal pneumonia biliosa. In an extreme case of the former type, bile drainage might come under consideration.

The plainly surgical complications of pneumonia are empyema, suppurating pericarditis, lung abscess, lung necrosis and lung gangrene.

The treatment of empyema, i. e., metapneumonic empyema, has been discussed so much since the war, and is such a large subject that we cannot go into all details in the few minutes allotted to this paper. I will therefore only pick out the most noteworthy improvements in treatment which the World War has produced. Let me state that I consider Mozingo's method** a glorious achievement. While it has been modified in different ways, it will be very hard to improve upon. The place of election is the eighth interpace in the posterior axillary line. First a diagnostic puncture with a fine needle is made to make sure of fluid containing micro-organisms. Then under local anesthesia a trocar is inserted *at once* at the *same spot* to guard against puncturing the lung. The trocar should not be too sharply pointed, and a half centimeter incision through the skin with a bistoury makes the introduction easy. Mozingo, whom I am following closely in this description, smears the cannula with vaseline. Through the cannula of the trocar a rubber tube, which fits snugly, is inserted. It is about 15 inches long and has from five to ten fenestræ about 3 mm. in diameter, 1 cm. apart. This tube is instantly introduced the moment the trocar is pulled out. Now the cannula is removed over the rubber tube, of which about 10 inches remains external. The fluid is then drawn off by aspiration, which

should be done slowly. Should the respiration become embarrassed, the aspiration stops, and even from 200 to 400 c.c. of Dakin's solution may be injected; but after a while the aspiration can be resumed. If there is high temperature with active pneumonia, normal saline is used for washing instead of Dakin's solution. The end of the tube is kept sterile by rubber covering and held in place by the artery forceps which clamps the tube to maintain negative pressure. "Treatments are usually given every four to six hours by day and once or twice at night, until the pyogenic membrane and fibrinous exudate have been dissolved, a process taking from two to fourteen days." A small amount of Dakin's fluid is left in after each flushing. After the amount of secretion has been greatly reduced (usually in four to ten days) and the smears and cultures are negative or nearly so, Mozingo injects about 5 c.c. of a twenty-four-hour old solution of 2 per cent dilution of liquor formaldehyde in glycerine once daily, which is repeated once daily for three to seven days. At the end of this time the tube is removed and the case simply watched for possible reaccumulation, in which case the tube would have to be reinserted. It is very necessary to be well familiar with the procedure in its details, but the results in the hands of Mozingo were superb.

One of the most valuable features of this modern treatment is the possibility of treating the empyema at the earliest moment, even before the pneumonia has subsided. In fact it has made us more aware of the danger that empyema may often already exist, where the unsuspecting still speaks of irregular lysis or of unresolved pneumonia. The only drawback to the method is the necessity of absolutely competent execution of the procedure, for, at the start, irrigations must be carried out at frequent intervals day and night. Another important new fact learned is that under proper sterilization with Dakin's fluid the fibrinous masses melt down. It is most probable, from our previous knowledge, that this liquefaction is due to the lysins in the serous transudate which follows the evacuation of the pus.

At the meeting of the Western Surgical Association in December, 1922, Doctor W. D. Gatch reported splendid results even in old empyemata which had been opened long before, by irrigation with a double strength Dakin's solution. The thick deposits of the empyema walls thinned down under this treatment and the cavity became sterile and

**The Surgical Treatment of Empyema by a Closed Method. Am. Jour. Med. Sc., May, 1921.

closed in the majority of his cases, while in a few it became at least very small.

These newer methods will make the severely mutilating operations, like Schede's or Estlander's thoracoplasties or Delorme's decortication, less frequently necessary; and when they are necessary, the operation is in a considerably less infected field and is that much less formidable.

Where rigid treatments and constant surveillance are impracticable, the maintenance of negative pressure can be secured by different means. A very efficient and simple contrivance, which I have used for many years, consists of a very thin collapsible rubber tube, hermetically joined to a short ordinary rubber tube which enters the chest wall air-tight. The collapsible tube is about a foot long and leads into a bottle which the patient carries about, attached to his side by adhesive plaster. When the patient coughs or presses occasionally, the chest cavity empties itself to the maximum of its compressibility and is held at this point. To insure complete collapse of the tube and therefore valvular action, we can split this flaccid tube on the sides for a distance and again paste the edges together flat with rubber cement. This flat tube reaches to the bottom of a six ounce medicine bottle, in which there is some 2 per cent formalin-glycerin. The constant maintenance of negative pressure is of course most valuable and ought to be considered as imperative in the treatment of any empyema, recent or old. Though the statement may appear perhaps rash, I feel that only a bronchial fistula ought to excuse us from instituting negative pressure.

Purulent pericarditis can only be mentioned in passing. An excellent recent paper on this subject by Hedblom,* of Rochester, is full of information and shows the way of successful attack in this dangerous condition.

Lung abscess, lung necrosis and lung gangrene belong in one group—the suppurative affections of the lung tissue. Aufrecht, in Nothnagel's "Specielle Pathologie und Therapie," mentions that he had seen 1,501 cases of croupous pneumonia, and that among 253 autopsies on patients who died of pneumonia, there were found lung abscesses three times; once he saw a lung necrosis. Lung gangrene he considers somewhat more frequent than lung necrosis, though no case came under his direct observation.

*The Treatment of Pericarditis with Effusion. Minn. Med., vol. v, p. 40.

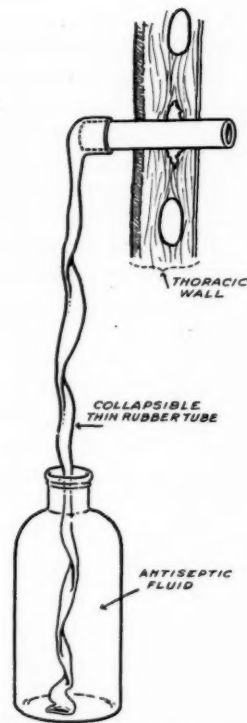


Fig. 1. Rubber tube entering, air-tight, the chest wall. Attached to it a soft flabby rubber tube, which enters a bottle containing some antiseptic fluid. Coughing or pressing empties the chest cavity to the limit of pulmonary expansion. The readily collapsible rubber tube keeps it at this point.

As long as individual cases impress themselves better upon the memory than generalizations, I will discuss the treatment on some examples.

A case of lung gangrene which I have observed of late, though it was said to have developed after pneumonia, was the late result of a tonsillectomy under general anesthesia. It therefore had the same etiology as most of the cases of lung gangrene and lung abscess of late years, and can hardly be called metapneumonic. But the clinical picture and treatment are the same. Pneumonia was said to have set in, which did not clear up, and gradually a foul expectoration was noticed. I saw the patient in June, 1921, about four months after the tonsillectomy, when the nauseating vile odor of her breath made it almost unbearable to stay in the same room. Through a vertical incision on the back we resected the first four ribs on the right side, removing as much of the ribs as seemed possible. Let me say that it would as a rule be better not to touch the first rib, but instead include the fifth. This gives

good access to the posterior and lateral areas of the upper lobe. We laid a cavity open which contained about three ounces of putrid pus. The walls of this very irregular and ragged cavity were shreddy and blackish. Some bridges of necrotic tissue were divided in order to lay the whole cavity widely open. No attempt was, however, made at removing any of the adherent necrotic tissue. The coughing and expectoration stopped almost suddenly. Before turning the patient on the healthy side at the beginning of the operation, we had her expectorate as much as she could. The head was kept low, and a slight Trendelenburg position is advisable.

Aspiration of gangrenous material has to be constantly guarded against. For this reason the operation is best done under local anesthesia up to the moment of opening the pleura, when general ether anesthesia (only up to the point of analgesia) becomes necessary in order to remove the pleural reflexes. At the same time differential pressure is now instituted. However, if the case allows it, it is best to operate in two stages, i. e., to stop before opening the pleura and to pack the wound in order to produce adhesions between the costal and visceral

pleural surfaces. Eight or ten days later the lung tissue can be entered with less danger of infecting the general pleural cavity. But even under these conditions differential pressure is an important safeguard. If the pleura is not firmly adherent, differential pressure is necessary for orderly operating and for the preservation of the proper anatomic relations.

The description of a simplified overpressure apparatus which we have used has been previously published.*

In the mentioned case the pleura was known to be greatly thickened and adherent. It was therefore permissible to finish the operation at one session, and under local anesthesia. Loose insertion of gauze, which may be softened by rubbing sterile vaseline into it, ends the operation. We must be very careful not to pull on any shreds of necrotic tissue, as most embarrassing bleeding is quite liable to follow. This is especially to be remembered when the dressings are changed later on. Our patient did pretty well though the wound did not

*Notes on Surgery of the Mediastinum. *Ann. Surg.*, Jan., 1922.



Fig. 2. Skiagram of case of lung gangrene of right upper lobe.

heal without trouble. About four months later the temperature rose to 100.5°. One evening coughing produced foul smelling pus and the temperature became normal again, while the cough remained foul, though not profuse. Cavertous breathing was then heard at the sternal end of the second rib. This rib was resected in front with all of its cartilage for a distance of 8 cm. A pus cavity was opened and drained. This gave us a cure which has now lasted about seven months.

The tendency to suppurating and gangrenous complications exists especially in diabetics and alcoholics. In strong young people a small lung abscess may heal spontaneously. A child of five years had a typical metapneumonic lung abscess in the left lower lobe posteriorly. The symptoms were not very severe. Under our observation the well localized amphoric breathing with the metallic rhonchi persisted for many months, the expectoration very gradually became less, and now after twenty years you cannot detect where the focus was.

Putrid suppurations are almost always surgical, though even here healing of small localized foci has been observed. The severity of the symptoms decides the procedure and the time of intervention. In an average case it is best to wait six or eight weeks before operating, to give time for proper demarcation. If the symptoms recede, it is best to keep watching and waiting.

Metapneumonic lung necrosis was observed only once by Aufrecht in his large experience. In other treatises I could not find it mentioned at all. The case which we observed may therefore be of interest. This lung necrosis was differentiated from lung gangrene, as there was not so much a putrid decomposition with its penetrating odor and the gradual melting down and expectoration of the gangrenous material, but rather a complete simultaneous total necrosis of a large part of the middle lobe on the right side. This large portion of the lung separated itself from the living tissue like a sequestrum. This piece of necrotic lung tissue was the size of a hen's egg and was fished out from the pleural cavity when the empyema was emptied by rib resection. We had the impression that it was the greater portion of the middle lobe. The patient recovered.

These suppurating complications occur principally after lobular and broncho-pneumonia, particularly after influenzal pneumonia. In the gangrenous forms the symptoms, apart from the stench,

are a good deal like that of lung abscess, but a perplexingly rapid emaciation and a greatly dilapidated appearance with a yellowish dry scaly skin is added to the picture, due to the putrid intoxication.

PNEUMONIA IN CHILDREN*

GEORGE K. HAGAMAN, M.D.

St. Paul

Pneumonia in children, as in the adult, is usually classified as broncho-pneumonia or lobar pneumonia. While it is true that the former constitutes a majority of the cases, especially in early infancy, the latter is by no means as rare as formerly supposed.

Broncho-pneumonia is one of the most common diseases of infancy and is frequently a secondary manifestation, being encountered as a complication of the milder infections of the respiratory tract, and following the contagious diseases, especially measles, whooping-cough, influenza and less often diphtheria and scarlet fever.

The great majority of cases occur under two years of age, and the highest percentage under one year. It is especially liable to attack the weakling and those debilitated by previous disease.

Lobar pneumonia is a primary infection occurring in the greatest number after three years of age and up to the period of adolescence. It usually attacks the vigorous and healthy child. It runs a typical clean cut course in contrast to broncho-pneumonia, which is often insidious in its onset, often lingering for weeks with frequent relapses. Usually one lobe or a part of a lobe alone is infected, the left base and the right apex being most often involved, although other locations are frequent. Resolution usually takes place quickly and completely after the crisis.

There are few diseases occurring in infancy and childhood in which the clinical symptoms are as varied as in pneumonia. The disease may be ushered in with a high fever and vomiting or its entire course may be afebrile, and in feeble children the clinical symptoms are at times out of all proportion to the physical findings. Cough and

*Presented in Symposium on Pneumonia at St. Paul Clinic Week, January, 1923.

increased respirations, however, are practically constant symptoms.

In broncho-pneumonia the fever is intermittent and usually ends by lysis, a sudden rise in temperature being an indication of fresh lung involvement. In lobar pneumonia the temperature curve more nearly approaches that of the adult and usually ends by crisis. A pseudo-crisis about twenty-four hours before the true crisis is frequently observed.

The respiratory cycle of inspiration, expiration, and rest is usually reversed, the type of breathing being changed to inspiration, rest, and expiration. The expiratory grunt is almost pathognomonic of lobar pneumonia in children.

The cough is often constant and troublesome, causing evident pain and keeping the child awake.

Thoracic pain at this period of life is almost always referred to the abdomen. Any attack of abdominal pain, even with marked tenderness and muscular rigidity, especially if the respirations are increased, should be looked upon with a great deal of suspicion and a pneumonia of the base of the lung, involving the diaphragm, should be excluded before any surgical measures are instituted.

In severe pneumonia the cerebral symptoms are often most marked, and we are at a loss to know whether we are dealing with a meningitis or a meningismus. If the cerebral symptoms are marked from the onset, it is not as apt to be a true meningitis as when the symptoms occur later in the course of the disease. A lumbar puncture is often necessary in order to reach a definite conclusion.

Throughout the entire course of the disease the ears should be carefully watched for evidence of otitis media with its attending discomfort, and the urine watched for a pyelitis, especially in girls.

The more circular chest contour, the elasticity of the chest walls and the smaller volume of lung tissue, tends to modify the physical findings from those in the adult.

An examination should never be made with a child on its side, as the under lung will often offer signs of consolidation and increased resonance. For this reason the child should be in the sitting posture or placed against the nurse's shoulder.

Percussion is of less value in the infant than in the adult. When practiced it should be very light, or the entire lung will be set in vibration and a false impression given. Often the sense of resist-

ance to the percussing fingers gives more valuable information than the percussion note produced.

Auscultation is of great value and the crying voice of the child is a positive help rather than a detriment to this method of examination.

Often diminished breath sounds are the first evidence of a pneumonia in children.

Creptant râles in the midst of the large moist râles of a bronchitis are the first findings of a pneumonia. No further findings are necessary, as tubular breathing and bronchophony are only found if the areas of consolidation become large enough to modify the transmission of breath sounds.

It is typical of broncho-pneumonia to find in both lungs creptant râles with small areas of consolidation, and the large coarse râles of bronchitis throughout the entire course of the disease. These varied findings change from day to day and seemingly from hour to hour. In the lobar pneumonia we have no large coarse râles; the sub-creptant râles last only for a short period, soon becoming displaced by all the evidences of true consolidation.

The cracked pot sound is not a symptom of cavity formation as it is in the adult. Indeed a diagnosis of a lung cavity in infancy and childhood should be made with a great deal of hesitancy, as it is rarely encountered.

A common error is made in differentiating between a case of unresolved pneumonia and an empyema. In empyema in children we find a dullness on percussion extending over a greater area than is usually found in an unresolved pneumonia. Upon auscultation we find bronchophony instead of diminished or absent breath sounds as in the adult. Free use of an exploratory needle will save some embarrassing mistakes.

D'Espine's sign will often show a mediastinal adenopathy which is often very slow in clearing up, and with a roentgenogram, showing enlargement of the peribronchial glands, a recent pneumonia must be excluded before a diagnosis of tuberculosis is made.

The roentgenogram is of great value in making a differential diagnosis. The roentgenograph may show the large consolidation of a lobar pneumonia or the smaller patches of a broncho-pneumonia scattered through both lungs, but in some cases, often severe ones, in which the areas of consolidation may

be minute but very general, will cast no shadow. The roentgenogram is of value in some cases of so-called abortive pneumonia in which all the clinical symptoms of a pneumonia are present but end by crisis in twenty-four to thirty-six hours with but few physical findings.

Broncho-pneumonia in early infancy is always a serious disease. The prognosis depends upon the age of the patient, its environment, and its previous physical condition and whether it is primary or secondary to some other disease.

The statistics giving a high mortality are usually those of institutional cases. In private practice the mortality is from 10 to 20 per cent, but in private practice the severe forms, secondary to the contagious diseases and in children of poor nutrition, are rarely met with.

No case is hopeless, no matter how extensive, if the nutrition can be maintained; but intestinal symptoms such as severe diarrhea, vomiting or tympanitis are of very unfavorable import.

In lobar pneumonia, in children over a year of age, the prognosis is very favorable, the mortality probably being less than 5 per cent. This is due in a large degree to the tremendous heart reserve, the lack of which gives a mortality of 30 per cent in adult life.

Pneumonia is a self limited disease. A proper diagnosis, perfect nursing and careful watching for complications are the essential requirements in caring for a child with this disease. Medication is usually uncalled for, except a sedative for a troublesome cough. Hydrotherapy will allay the nervous manifestations, and the alcohol pack is effectual in reducing excessive temperature.

Changing the infant from side to side is important and even taking the infant up for a few moments at intervals is not contraindicated.

If secretion is excessive, minute doses of atropine are of benefit.

If the cough is rasping and unproductive, the steam kettle gives marked relief.

The pneumonia jacket in a child with a high fever is illogical and unnecessary and only adds to its discomfort.

If cyanosis is marked, strychnine, caffeine, whiskey or oxygen may be given. Stimulating the heart from the onset of the disease is unnecessary.

The serum treatment has been of some benefit in pneumonia caused by the Group 1 pneumococcus, but the vast majority of pneumonias in infancy and childhood are caused by Group 4.

Nourishing food at proper intervals depending upon the age, fresh air, moderate temperature and plenty of sunlight, complete the treatment of pneumonia as found in children.

NITROBENZOL POISONING IN CHILDREN: REPORT OF THREE CASES CAUSED BY SHOE DYE

F. C. RODDA, M.D.
Minneapolis

CASE I. On December 6, 1921, I was called to see S. W., aged three and one-half years. The patient had been under our observation for the preceding year as a normal child. At about 4 P. M. the mother reported by telephone from a downtown store that she had noticed the child's lips were blue. Thinking the child might be having a chill we advised the mother to take the child home, put her to bed and keep her warm. This the mother did, but the discoloration had increased to such a degree that the mother became very much alarmed and hurriedly called me at 8 P. M.

The appearance of the child was most striking: the face, mucous membranes, hands and feet were deeply cyanosed, almost black; yet the little patient did not appear distressed and was mentally clear. The temperature was normal. The first impression was that of an acute heart failure. The pulse, however, was of good quality, regular, rate about 140. There was no evidence of enlargement of the heart and auscultation was negative except for a faint, systolic murmur over the base. The second thought was poisoning from some coal tar derivative such as acetanilid—but no drug had been given. I had no explanation for the symptoms and was completely at sea. Dr. Archie Beard was called in consultation and he confirmed my physical findings. By this time, however, she had vomited undigested ice cream eaten at lunch and the diagnosis of ptomain poisoning was suggested. She was given an enema, half an ounce of magnesium sulphate and watched most closely during the night. There was no further vomiting, no purging nor prostration and

the next day she was entirely recovered. The diagnosis of ptomain poisoning was therefore hardly tenable. The case therefore remained a distressing puzzle until some time later we came upon Stifel's report of similar symptoms caused by poisoning from shoe dye. We at once questioned the mother on this clue and learned that the day preceding the attack the child's heavy buckskin shoes had been dyed black at a neighborhood shoe repair shop. They had been unwrapped and put on for the first time at noon, just before going down town. The mother had noted "a very heavy, bad odor to the shoes."

CASE II. September 22, 1922. M. G., nine years of age, was brought to the office for examination—for heart trouble presumably. She had been strong and well. The preceding afternoon on her return from school at 3:30 P. M. the mother had noted a peculiar ashen gray color of the face. The child, however, did not complain of feeling ill and was permitted to attend a wiener roast. By 7:30 P. M. she had become cyanosed—in the words of her mother, "her tongue, lips and finger nails were black." Her hands were clammy and there was complaint of headache. The mother became alarmed and called a physician, who found nothing of note except the cyanosis. He assumed the symptoms were due to food poisoning—gave her brandy and prescribed sodium phosphate. The discoloration by midnight had cleared considerably and the next morning she appeared entirely recovered. On examination at our office the next day she appeared normal in every way—no fever, urine negative. A complete blood examination, including spectroscopic for methemoglobin, was negative except for a mild anemia. This time I suspected nitro-benzol poisoning and obtained the following facts from the mother. A pair of shoes had been dyed at a department store shop the preceding day. They were removed from the box in which they were carefully wrapped and put on about 12:30, just before going back to school. Her symptoms began three and one-half hours after putting on the shoes, and were of alarming degree at 7:30 P. M. The shoes were inspected the next day. They were heavy, recently dyed and had a disagreeable odor. We were unable to get a sample of the dye.

For Case III I am indebted to Dr. D. B. Pritchard of Winona, and quote his report verbatim:

"M. L., age sixteen, a girl who had always been in good health, except for an acne of the face and

slight hypothyroidism, on March 22 went to the movies feeling perfectly well. Three hours later she returned home, sat on a radiator, and was reading when her mother noticed that her hands and face looked, as she thought, much soiled with dirt. She told the patient to go upstairs and wash her hands and face and when returning from the lavatory she fainted and was unconscious for about two minutes. Her mother removed her shoes, opened her dress, and carried her to bed.

"When I arrived a few minutes later she was conscious, but her skin and mucous membranes were very cyanotic. Her pulse was so fast that it could not be accurately counted,—something over 200 to the minute, but appeared to be regular. My first thought on seeing her was poisoning by some coal tar derivative, acetanilid, for instance, but she had taken nothing. Her temperature was normal, breathing not labored, no sign of air hunger nor râles in chest. I was completely at sea as to the cause of this attack. I tried pressure on the vagus with the hope of slowing her heart, without effect.

"I saw her four hours later, by which time the pulse was 120, respiration 24, cyanosis unchanged. The next morning the pulse was 100, temperature normal, respiration 22. The cyanosis had almost entirely cleared up. The nurse reported that she had noticed she was becoming less blue about 3 A. M. The day following, at my morning visit, she was apparently completely recovered.

"At my first visit, when going over the child's recent history, the only thing that seemed in any way unusual was that when at the movies she had been considerably annoyed by what she described as a burning and smarting of her feet. I was very much alarmed about her condition and whenever I saw any of my fellow practitioners I related the history of the case to see if anybody could offer a suggestion that would throw any light on it. On April 3, at a meeting of the Winona County Medical Society, one of the members said that he heard that Dr. Rodda of Minneapolis had seen two cases of marked cyanosis as the result of wearing shoes that had recently been dyed. The next morning on my visit to the patient, I found that her shoes had been dyed on the 20th of March, two days before this attack, and that she had worn them to the movies for the first time since dyeing. I called Dr. Rodda on the telephone and he reported that he had seen two such cases and was kind enough to send me such information as he had on the subject. It looks

to me as if the shoe dye were responsible for this cyanotic condition, but I have not been able to find that it produces a tachycardia. The patient is now in her usual health. The shoe dye is in the hands of chemists to be analyzed."

(I may state here that the sample of shoe dye contained a considerable amount of nitro-benzol.)

We have heard of several other cases. Within the past week a university student was taken to the hospital because of extreme cyanosis which lasted forty-eight hours. He had had his shoes dyed while on his feet. The dye contained nitro-benzol.

Because these acute and alarming symptoms are quite inexplicable unless one is cognizant of nitro-benzol poisoning, I thought it well worth while to report these three cases and give citation to the literature. Whereas these reported cases, though alarming, made complete recoveries, there are reports of numerous fatalities in the literature.

Chemistry.—Nitro-benzol, $C_6H_5NO_2$ (commercially known as oil of mirbane), is obtained when benzene is acted upon by nitric and sulphuric acids. It is insoluble in water, has a sweetish taste and a strong odor, resembling oil of bitter almonds. It is used in the manufacture of explosives, anilin dyes, and to a lesser extent in preparing soaps and pomades. Its use, in confectionery and flavorings, is now forbidden under the Pure Food Laws.

Toxicology.—Nitro-benzol breaks down blood corpuscles, forms methemoglobin or a closely related substance and paralyzes nerve centers. It proves poisonous (a) when taken internally, (b) when inhaled as a vapor, (c) when absorbed through the skin.

It is possible that a much smaller dose of the drug may prove toxic when absorbed through the skin than when taken by mouth, since its absorption is delayed when mixed with food contents of the stomach.

Symptoms.—After several hours, the skin, nails and mucous membranes suddenly become livid; the pulse rapid and feeble; the skin, cold and clammy; giddiness and vomiting ensue; in severe cases there follow coma, convulsions, and death by apnea. In severe cases, if death is not immediate, there is jaundice.

Treatment.—When taken internally an emetic should be given, or, better, lavage used. Since the capacity of the blood to transport and give up oxygen is lowered, fresh air, oxygen, and, in severe

cases, artificial respiration are indicated. Respiratory stimulants such as atropin might be of value.

I would call your attention to the fact that aniline, a derivative of nitro-benzol, is also toxic and produces identical symptoms. Anilin is used extensively in preparing dyes for shoes and socks, and in the manufacturing of pencils and ink for stencils. It is probably true that anilin should receive the same consideration as nitro-benzol.

The first fatal case of nitro-benzol poisoning was reported by Lethely² in England in 1863. Stone³ described the first case in this country in 1904. Glaser⁴ in 1911 reported several cases of poisoning caused by inhaling the vapor. Adams⁵ in 1912 collected twenty-nine cases of nitro-benzol poisoning from the literature. Alice Hamilton⁶ discusses chronic forms of industrial poisoning from the same source. But it is the more uncommon and unsuspected sources of the poison to which I wish to call your attention.

Scott and Hanzlik⁷, Loeb, Bock and Fitz⁸ have reported several cases of acute poisoning caused by drinking alcohol denatured with nitro-benzol. Bohland⁹ reports a case due to the use of a delousing remedy containing nitro-benzol.

It was from Stifel's reports that we got an inkling of the cause of symptoms in our cases. He had seen seventeen cases of these peculiar attacks of cyanosis and was unable to find the cause. Water and food had been suspected. In the eighteenth case shoe dye was proven the cause. He was able to cause the same symptoms in privates who volunteered to have their own shoes dyed. Subsequently, he was able to elicit the usual history in most of the other seventeen victims. Cloud¹⁰ reported a case in a child of three years and Miner¹¹ reported a case of poisoning following the use of a russet colored dye.

Perhaps the most striking instances of nitro-benzol poisoning are those in a series of infants, reported by Ewer¹², caused by the dye used in stenciling or making hospital linen. These cases were in infants ranging from sixteen days to eleven weeks of age. Freshly marked linen had been applied so that marks of the ink or dye were found on the skin. Three infants made speedy recovery after typical symptoms; two were very ill, had convulsions and survived only after the administration of stimulants and oxygen. These two infants had broken integument due to eczema. Thomsen¹³ reported other cases in infants from the same cause.

The question may be asked, why cases are not more numerous and why they occur in groups. This we think is due to the fact that one kind of dye may be richer in poison than others, or there may be idiosyncrasy to the drug. Lipschitz¹⁴ thinks this is due to a special reaction of the cells and speaks of it as the "individual poison factor." Doubtless when the symptom-complex is more generally recognized these cases will not be so rare.

In four samples of shoe dye purchased in the open market in Minneapolis, Miss Ziegler, of the Pediatric Department of the University of Minnesota, found nitro-benzol in all.

Since nitro-benzol is now known to be so toxic and to produce such characteristic symptoms, physicians should be on the alert to recognize these cases to run down the source of the poison. A concerted effort of the medical profession might banish the chemical largely from commercial use. If, however, its use in the trades is imperative, knowledge that it is poisonous should be given publicity. Further, simple precautionary directions should appear on original packages of preparations containing nitro-benzol. For instance, exposure of the dyed shoes for a day or two to the open air removes the toxic effect of the dye; freshly marked linen should not be used before being laundered.

BIBLIOGRAPHY

1. Stifel, R. E.: Report of a case of cyanosis at Camp Jackson, S. C., due to poisoning from shoe dye. *Jour. Am. Med. Assn.*, Feb. 22, 1919, 72, 592-593. Methemoglobinemia due to poisoning by shoe dye—Report of a series of cases at an army camp. *Jour. Am. Med. Assn.*, Feb. 8, 1919, 72, 395-396.
2. Letheby: Physiological properties of nitrobenzole and aniline. *Pharm. Jour.*, 1863, Series 2-5, 130.
3. Stone: Fatal poisoning due to skin absorption of liquid shoe blackening (nitrobenzol). *Jour. Am. Med. Assn.*, 1904, 43, 977.
4. Glaser, C.: Report of several cases of poisoning by the vapor of nitrobenzol. *Jour. Soc. Chem. Indus.*, London, 1911, 30, 519.
5. Adams, S. S.: Nitrobenzol poisoning. *Trans. Assn. Amer. Physicians*, 1912, 27, 503.
6. Hamilton, Alice: Industrial poisonings by compounds of aromatic series. *Jour. Indus. Hyg.*, 1919, 200.
7. Scott, R. W., and Hanzlik: Poisoning by alcohol denatured with nitrobenzene. *Jour. Am. Med. Assn.*, 1920, 74, 1000.
8. Loeb, R. F., Bock, A. V., and Fitz, Reginald: Acute nitrobenzol poisoning with studies on the blood in two cases. *Am. Jour. Med. Sci.*, 1921, 161, 539.
9. Bohland, K.: Nitrobenzolvergiftung durch Einstmen eines Lausermittels. *Deutsch. Med. Wochenschrift*, 1919, No. 5, 1388.
10. Cloud, R. E.: Poisoning by shoe dye. *Jour. Am. Med. Assn.*, 1922, 78, 280.
11. Miner, C. S.: Methemoglobinemia due to poisoning by shoe dye. *Jour. Am. Med. Assn.*, 1919, 72, 592.
12. Ewer, H.: Ungewöhnliche Ursache gehäufte Fälle von Nitrobenzolvergiftung bei Säuglingen. *Deutsch. Med. Wochenschrift*, 1920, No. 39, 1078.
13. Thomsen: Nitrobenzolvergiftung bei Säuglingen. *Munch. Med. Woch.*, 1921, No. 13, 309.
14. Lipschitz: Der Zusammenhang von Giftwirkung und Zellstimmung. Toxikologische Untersuchungen an Sprengstoffen. *Munch. Med. Woch.*, 1920, No. 46.

THE ACCESSORY NASAL SINUSES AS FOCI OF INFECTION IN CHILDREN*

SAMUEL AMBERG, M.D.

Section on Pediatrics

Mayo Clinic, Rochester, Minn.

A focus of infection may be defined as the place where bacteria settle after having gained entrance to the organism, and from which they travel by various routes to other tissues or organs producing lesions. It has not been definitely proved that lesions can be produced by toxins formed in these foci of infection, but it is probable. The discharge of bacteria or of such toxins may be constant or intermittent. The pathologic changes produced at the seat of the focus may be of various degrees of activity; at times they are not intense enough to produce clinical symptoms, at other times they elicit very pronounced ones. One of the most characteristic features of the focus of infection is the fact that its removal brings about an alleviation of symptoms. It may happen, however, that secondary foci may develop from the first focus and under these conditions the eradication of the primary focus may not be followed by disappearance of symptoms. It is evident that foci of infection may be established in various parts of the organism, but the upper respiratory tract with its adnexa seems to be the place of predilection.

The tonsils and the accessory nasal sinuses are probably the most important foci of infection, at least during childhood; Griffith states that accessory nasal sinuses are not so often involved in childhood, as in later life. Then he continues: "Kelly could collect but eighteen cases of empyema of the antrum, and Onodi could find in medical literature

*Read before the Southern Minnesota Medical Association, Faribault, Minnesota, June 11, 1923.

only fifty-three instances of disease of the accessory sinus developing before the age of ten years. Phelps and Skillern both emphasize the infrequency of sinusitis in infancy and early childhood, owing to the imperfect development of the sinuses at the period." This statement of Griffith represents the opinion of many pediatricians, and if it were true, the sinuses would not concern us here. Many nose specialists, however, differ decidedly from this opinion. Harke, as early as 1895, opened the sinuses at necropsy in sixty-three of 394 children, nine months to fifteen years of age, and found evidence of disease in fifty-two. Dean has reported observations on two series of children, thirteen years of age or younger, who were destined for tonsillectomy and adenoidectomy. Fifteen per cent of the 234 children observed in the earlier series, and 46 per cent of the 145 in the later series revealed evidence of sinus disease. White, in the examination of fifty children prior to tonsillectomy, found, in thirty-five instances evidence of sinus disease, and Mollison and Kendall found twenty per cent of antrum involvement in 102 children selected for tonsillectomy. Onodi in 1911 stated that it should be regarded as an established fact that when children suffered from frequent attacks of acute cold in the head, some of the accessory sinuses are also affected, and that as a rule infectious disease attacked the partially developed accessory sinuses. Indeed, sinus disease may occur at a very early age. Dean reports a case, showing evidence of sinus involvement in a child six weeks old. Collet reports a case in a child one month old, and Agazzi in a child eight weeks old. Collet considers involvement of the antrum as "not rare in nurslings" and describes a morbid entity resulting from it.

During childhood the antrum is the most commonly diseased of the sinuses, but the ethmoid, more rarely the sphenoid, and still less often the frontal sinuses may be infected. The sphenoid is rarely sufficiently developed to be of clinical significance before the fifth year, and the frontal sinus before the eighth, but it must be emphasized that the sinuses may be fully developed much earlier, and become diseased.

The antrum being the most commonly affected, it is well to point out a few of its peculiarities. In infancy and childhood the antrum is inside of the orbit, its floor is higher than the floor of the nose, its anterior-posterior extension is much greater than

the vertical and is surrounded by bone thicker and more cancellous than that of the adult; the bone also contains teeth buds.

The chief etiologic factor in the production of disease in the sinuses is nasal and naso-pharyngeal infection, which so often occur with large tonsils and adenoids. The infection of the antrum from the teeth, which occurs in adults, is apparently of little or no significance in childhood. (In passing it may be noted that the roots of the teeth may be infected from the sinuses, infection in this reverse order having been observed.) Obstruction of an opening of the sinuses causes a damming of the secretion, interferes with the ventilation, and thus seems to favor bacterial growth.

In a number of instances in which the sinuses have shown evidence of disease, no bacteria could be grown from the material obtained from the sinuses. However, a large variety of bacteria have been cultivated: *Streptococcus hemolyticus*, staphylococcus, pneumococcus, influenza bacillus, meningococcus, and so forth. Dean stressed the greater severity of infections with *Streptococcus hemolyticus*.

Sinus infections occur in the course of various infectious diseases and, in cases of this sort, the sinusitis is often masked by the primary disease, and is, therefore, overlooked. Such infections of the sinuses have been seen in measles, diphtheria (even when no membrane occurs in the nose), scarlet fever, pneumonia, and epidemic cerebro-spinal meningitis. Of the latter Agazzi reports findings from ninety-nine necropsies, of which sixty were in children under fourteen years of age, and in a number of these the post-mortem was not complete with regard to the sinuses. Involvement of the sinuses was present in thirty-six instances. Furthermore, a close association seems to exist between sinusitis and chronic bronchitis, or bronchiectasis. Of seventeen cases of sinusitis in children under fourteen years of age observed at the Mayo Clinic, chronic bronchitis was found in four, and bronchiectasis in five. The connection between bronchitis, or bronchiectasis, and sinusitis has been stressed particularly by Mullin.

PATHOLOGY

The lesions which occur in the sinuses do not differ from those of other mucous membranes, and need not be considered here. Coakley emphasizes these differences from the adult. The cavities are

less developed in children and, therefore, more easily drained. Consequently surgical intervention is not so often necessary and the bone is more easily destroyed.

DIAGNOSIS

The diagnosis offers certain difficulties in children. It is doubtful whether a sinusitis exists if the mucous membrane of the nose and naso-pharynx is entirely normal at repeated examinations; the examination of the nose and naso-pharynx is, therefore, very important. The anterior rhinoscopy can easily be accomplished in children, but at times the posterior rhinoscopy presents unsurmountable difficulties without anesthesia, particularly in young infants. Attention is paid to the discharge coming from the opening of the sinuses, with or without suction.

In the hands of an expert the nasopharyngoscope may be of great value. The transillumination of the antrum and frontal sinuses has been abandoned by many specialists, but is retained by others. So far as the antrum is concerned, the difficulties in childhood are still greater than those encountered in the adult, owing to the greater thickness of the bone and the teeth buds. Obviously, the illumination of the frontal sinuses can only be accomplished when they are there. The same difficulty is attached to the roentgenologic examination, and furthermore, it must be kept in mind that the sinuses may not be developed equally on both sides; the sinus may be present on one side, and absent on the other. Correct interpretation of the findings requires experience. Moreover, depending on the contents of the sinuses, the hardness of the tube with which the roentgenograms are taken will enter into consideration. Not infrequently it happens that a sinusitis escapes detection by means of roentgenograms in spite of the presence of pus, or clinical evidence of involvement. In our small series of cases roentgenograms were taken in fourteen, the other patients leaving before the roentgenologic examination could be made. Of these fourteen, the findings were negative in seven, in spite of the indubitable clinical evidence of sinus involvement, or of the finding of pus at operation.

The clearest evidence of involvement is found by opening the sinuses, and in suspected cases antrum puncture has been recommended, and has often been made. It has the additional advantage of instituting treatment. No ill effects have been re-

ported thus far in children. However, puncture of the antrum in children, owing to the peculiarities of the antrum, has to be done with great care, and we must not forget that cases of collapse and sudden death have occurred following puncture of the antrum. Gording collected a series of such cases and studied the effect of antrum puncture on the animal, and found a reflex influence on the respiratory centers.

Of the objective symptoms, which are prominent in the adult, the sensation of the postnasal discharge is absent in children. The symptoms, as encountered, are mouth breathing, discharge from the nose, which is perhaps the most common, and sneezing. However, in our series of cases (from five to fourteen years of age) the sneezing was a predominant symptom in only one instance, that of a seven-year-old boy. It may perhaps be more common in younger children. Headache was present in our series only twice, in both cases of the frontal type, but severe in only one instance. The discharge may be mucopurulent or purulent. The general condition in most of our cases was rather fair. In only one was there a marked anemia, and in three the general condition was poor. The enlargement of the deep cervical glands and of the submaxillary lymph nodes, especially in cases in which the tonsils and adenoids have been removed, may be of diagnostic significance, particularly in the absence of decayed teeth. I may say that in ten of our cases the tonsils and adenoids had been removed. The history and the thoroughness of their removal is of great significance so far as persistency of glandular enlargement, of well defined febrile attacks, of discharge from the nose and from the nasopharynx, point to the possible involvement of the sinuses. The fever in sinus disease is dependent on the degree of involvement.

The blood picture has never been stressed to my knowledge, but Dr. Bunting called my attention to the possibility of an eosinophilia, particularly with an acute attack. In one of our cases the eosinophils reached the number of 14.5 per cent. This phase of the subject awaits further development.

The discussion of the diagnosis may be concluded with a remark of Coakley that the difficulties of examination and the uncertainties of some of the tests are in direct proportion to the age of the patient. The younger the child, the more one has to consider the probability of the infection, as absolute diagnosis is rarely possible.

DISCUSSION

As Onodi has said, it need hardly be pointed out that many fatal cases of this disease remain obscure. The possibility of a fatal attack of sinus disease has been emphasized by Dean, who reported the death of a two month old infant. As mentioned, the direct surgical interference is less frequently necessary in children than in adults and, indeed, it has been stated that 80 per cent of the cases of sinusitis in children, associated with enlarged and infected tonsils and adenoids, clear up with the removal of the tonsils and adenoids. Bronchitis and sinusitis may occur simultaneously, and the eradication of the sinus disease may enable the defensive mechanism of the organism to overcome the rest of the disease. A similar relationship has been noticed in cases of tuberculosis, in which the removal of a badly infected organ, as for instance a kidney, led to marked improvement of other tuberculous manifestations, in spite of the fact that numerous tuberculous foci were present.

The relationship between sinus disease and involvement of the lungs has been discussed further by Dunham and Skavlem, who point out that in a number of cases which were diagnosed as tuberculosis of the lungs by able clinicians, an involvement of the lungs referable to the sinuses, infected tonsils, or infected teeth was demonstrable. In our small list we have roentgenologic diagnoses of tuberculous involvement of both upper lobes in cases in which the tuberculin test was negative.

Dean has emphasized very strongly the relation of sinus disease to infective arthritis of infants and the cure obtained by their treatment. With micro-organisms obtained from such cases he was able to produce arthritis in rabbits. At present we have a little girl in the hospital with severe arthritis, but repeated examination of her nose has not revealed any sinus disease, nor have repeated roentgenologic examinations shown sinus involvement.

It has also been claimed that a focal relationship exists between sinusitis and otitis media, acute cervical adenitis and phlyctenular conjunctivitis, and in older children between sinusitis and meningitis, brain abscess, orbital cellulitis, neuralgia, particularly of the second branch of the fifth nerve, pyelitis, recurrent vomiting, chorea and other nervous manifestations, endocarditis, asthma, chronic bronchitis and bronchiectasis, and nephritis. Encephalitis, no doubt, will be added to the list before long. The results which have been reported in

cases of asthma of years' duration which have been cured by treatment of sinus disease are very striking. I have been told of a number of cases of nephrosis in children which cleared up following treatment of sinus infection. It seems that the sinuses may be diseased in children rather often, and their importance as possible foci of infection is established. How frequently the sinuses do act as foci of infection is, however, another question which awaits statistical study.

BIBLIOGRAPHY

1. Agazzi, B.: Zur Bakteriologie der Nase und ihre Nebenhöhlen, des Nasenrachenraumes und der Pankenhöhlen bei Meningitis Weickselbaum. *Ztschr. f. Hals-Nasen- u. Ohrenheilk.*, 1923, iv, 193-265.
2. Coakley, C. G.: Diseases of the nose and throat. Sixth ed. Philadelphia, Lea & Febiger, 1922, 287-300, 300.
3. Collet, F. J.: Sinusite maxillaire du nouveau-né. *Arch. internat. de laryngol.*, 1922, xxviii, 1041-1050.
4. Dean, L. W., and Armstrong, Margaret: Nasal sinus disease in infants and young children, including bacteriologic study. *Ann. Otol., Rhinol. and Laryngol.*, 1919, xxviii, 452-465.
5. Dean, L. W.: Complications of paranasal sinus disease in infants and young children. *Ann. Otol., Rhinol. and Laryngol.*, 1923, xxxii, 285-297.
6. Dean, L. W.: Infections of the paranasal sinuses in infants and young children, with special reference to adenoids and chronic tonsillitis as etiologic factors. *Ann. Otol., Rhinol. and Laryngol.*, 1918, xxvii, 534-556.
7. Dean, L. W., and Armstrong, Margaret: The occasional necessity of doing radical operations on the paranasal sinuses in children, with a report of cases. *Ann. Otol., Rhinol. and Laryngol.*, 1920, xxix, 602-613.
8. Dean, L. W.: The treatment of nasal accessory sinus disease in infants and young children. *Ann. Otol., Rhinol. and Laryngol.*, 1920, xxix, 675-678.
9. Dunham, K., and Skavlem, J. H.: Sinus disease and lung infections. *Jour. Radiol.*, 1923, iv, 37-39.
10. Gording, R.: Serious complications in the puncture of the maxillary antrum. *Ann. Otol., Rhinol., and Laryngol.*, 1920, xxix, 293-365.
11. Griffith, J. P. C.: The diseases of infants and children. Philadelphia, W. B. Saunders Co., 1920, ii, 3-8.
12. Harcke: Quoted by Onodi.
13. Kelly: Quoted by Griffith.
14. Mollison, W. M., and Kendall, N. E.: Frequency of antral infection in children. *Guy's Hosp. Rep.*, 1922, lxxii, 225-228.
15. Mullin, N. F.: The accessory sinuses as an etiologic factor in bronchiectasis. *Ann. Otol., Rhinol., and Laryngol.*, 1921, xxx, 683-689.
16. Onodi, A.: The accessory sinuses of the nose in children. New York, W. Wood & Co., 1911, 14-23.
17. Phelps and Skillern: Quoted by Griffith.
18. White, F. W.: Pathologic nasal accessory sinuses in children. *Ann. Otol., Rhinol., and Laryngol.*, 1921, xxx, 221-226.

MINNESOTA MEDICINE

OFFICIAL JOURNAL MINNESOTA STATE MEDICAL ASSOCIATION,
SOUTHERN MINNESOTA MEDICAL ASSOCIATION, NORTHERN
MINNESOTA MEDICAL ASSOCIATION, AND MINNE-
APOLIS SURGICAL SOCIETY
Owned and Published by
The Minnesota State Medical Association.
Under the Direction of Its
EDITING AND PUBLISHING COMMITTEE
R. E. FARR, M.D. H. LONGSTREET TAYLOR, M.D.
Minneapolis St. Paul
L. B. WILSON, M.D. F. L. ADAIR, M.D.
Rochester Minneapolis
J. T. CHRISTISON, M.D., St. Paul

EDITORIAL OFFICE

CARL B. DRAKE, M.D., Editor
402 Guardian Life Bldg., Saint Paul

BUSINESS OFFICE

J. R. BRUCE, Business Manager
402 Guardian Life Bldg., Saint Paul
Telephone: Cedar 1683
210 Commercial Bldg., Minneapolis
Telephone: Atlantic 2716

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal itself, not to individuals.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Contents of this publication protected by copyright.

Subscription Price: \$3.00 per annum in advance. Single Copies 25c. Foreign Countries \$3.50 per annum.

VOL. VI SEPTEMBER, 1923 No. 9

EDITORIAL

The State Meeting

A perusal of the tentative program which appears elsewhere in this issue of the journal will convince the reader that the program committee has done unusually well in choosing subjects and speakers for this year's meeting. Efforts have been made to choose subjects of practical interest, and surgical dry clinics will be an innovation of further practical value.

The work of the program committee is no simple task. Members of the committee must exercise good judgment with the sole aim in view of producing the best possible program. Their arbitrary powers must be exercised and personal feelings ignored.

The final program is to be mailed to each member of the Association in advance of the meeting, which will take place in St. Paul, October 10, 11 and 12, 1923, Deo volente!

The Narcotic Evil

Of all the drugs in the physician's armamentarium, opium and cocaine (with their derivatives) are undoubtedly the most valuable. These drugs have relieved untold suffering and with the advance of modern surgery are indispensable.

These so-called narcotic drugs, like everything else of value in this world, are much abused, but the extent to which they are misused is not commonly appreciated. Current literature is calling attention to the recent marked increase in the illegal use of narcotics in this country. In a speech before the Washington Anti-Narcotic Conference, Fred A. Wallis, commissioner of correction of New York, recently made the startling statement that the United States heads the list of all other countries in the use of opium derivatives with a per capita consumption of 36 grains as compared with India, 27; France, 4; England, 3; Germany, 2; China, 2, and Italy 1 grain. The same authority refers to the known 500,000 addicts in New York state alone, whose average age is twenty-three. It is elsewhere estimated that there are between one and two million habitual narcotic users in the United States. Surely alcohol is not our sole problem.

No argument is needed as to the deleterious effects on the habitué. The paralyzing of efficiency is only one of its phases. Its use is like a disease—of short incubation, insidious development, and the peculiar tendency of the affected individual to inveigle others into the same predicament results oftentimes in a rapid contagion. The well known undermining of character and moral sense and the craving for the drug leads the helpless individual to any length in order to obtain it. Drug users belong commonly to the criminal class.

What is to be done? Surely this is a large problem and the solution is not apparent.

Publicity is of value and its searchlight is being thrown upon the situation. The greatest hope, as in the control of any epidemic, lies in prevention. Federal and state authorities can do little without a strong public opinion back of them. This should not be difficult in the case of an evil for which there are few proponents. Those who have to be fought are the individuals who are making enormous profits through illicit traffic in these drugs, and a certain proportion of the addicts themselves. In San Francisco alone, custom seizures of narcotics in 1922 were valued at \$162,000. Probably ten times this amount was smuggled into the same port

in that year. These figures serve to indicate the enormous sums of money involved.

The poppy and coca plants are raised in foreign countries. Smuggling will be hard to control. International co-operation is essential in the solution of the problem and control of drugs from producer to consumer will be necessary. The League of Nations has considered the question of the limitation of the cultivation of the poppy to the needs of medicine, but at its meeting, October 20, 1921, failed to recommend a resolution to this effect submitted by a heathen Chinese, Wellington Koo by name, and, instead, substituted the word "legitimate" for the phrase "strictly medicinal"; for it appears that in certain countries, notably India, the chewing of the poppy is legitimate. Little can be accomplished internationally as long as some nations legalize the non-medicinal use of narcotics.

The individual addict must, of course, be treated. This phase of the problem our country particularly has to meet. Sudden withdrawal of the drug produces severe constitutional symptoms and medical authorities differ as to the best method of treatment. This difference of opinion has led to much criticism, on the part of many members of the profession, of recent rulings by the administrator of the Harrison narcotic law whereby the profession has been dictated to in the matter of treatment. It is contended that such rulings have driven the habitué from the doors of the regular profession and encouraged the illicit trade in drugs.

It is doubtless true that a certain amount of blame can be laid at the door of the profession for causing addicts through the careless administration of narcotics. If the average age of the 500,000 known habitués in New York state is twenty-three it seems unreasonable to suppose that any large proportion are the result of medical administration. Nevertheless, in this matter too great care on our part cannot be taken. Where we are most to blame is the prostitution of the profession by a few members who sell their birthright without attempting to cure these unfortunates. Such members, admittedly few, must be severely dealt with. It is becoming more and more apparent that each county society will have to assume this unpleasant task.

Diathermia

Recent reports of the use of diathermia in the treatment of pneumonia patients in St. Mary's Hos-

pital in Hoboken and in the United States Marine Hospital on Staten Island have brought to the attention of the medical profession and the laity a method for the therapeutic administration of heat, which, though not a recent discovery, has been little used by the profession. In short, diathermia as the word signifies (dia—through, and thermos—heat) is the production of heat in the field between two electrodes of a high frequency electric current.

Nine years ago the writer had the opportunity of observing a demonstration of diathermia in Nagelschmidt's physiotherapy institute in Berlin. When the electrodes were applied to the arm a localized flushing of the skin occurred and a sense of warmth was felt throughout the arm between the electrodes. To illustrate what could be accomplished with a strong current the electrodes were placed in egg albumen and coagulation occurred in the intervening electric field. The possibilities of this method in producing a local hyperemia and increase in temperature made a very definite impression on the observers present.

The transmission of heat has been classified into conductive, convective and conversive. The two former methods are used extensively in therapeutics as illustrated respectively by the hot compress and the incandescent electric lamp. Conversive heat is illustrated by diathermia where the resistance of the portion of the body between the electrodes converts the current into heat. Increased temperature results in the tissues lying in the pathway of the current, with resulting hyperemia, and possibly inhibition of bacterial growth. The desirability of hyperemia in hastening reparative processes has long been recognized and it seems not unreasonable to predict that diathermia will take its place as the best method for producing hyperemia.

A technical description of the mechanics of diathermia will not be attempted. Suffice it to say that the current used is known as the d'Arsonval current which has an inconceivably high frequency (millions per second) and that this is obtained by step-up transformers and the use of condensers.

The response of tissues to low frequency in contrast to high may be compared in a way to the sensations produced on the eye and ear by a succession of stimuli. The eye can detect a succession of images up to a certain point where eye strain, evinced by headache and vomiting, ensues, and beyond which a sensation of continuous motion results. Similarly, with the ear, beyond a certain

point a succession of sounds is indistinguishable and is interpreted as sustained sound. Electrical stimulation of tissue produces certain reactions of sensation and contraction. The enormously high frequency of the d'Arsonval current fails to produce these reactions but raises the temperature of the tissues, a result not obtainable by ordinary electric currents.

Inflammation is the normal reaction of the tissues in the process of repair. The application of diathermia can be varied so as to produce a condition varying from the first blush of hyperemia to actual necrosis. No part of the anatomy is inaccessible to application and any morbid condition where hyperemia is desirable is sufficient indication for its use. The presence of undrained pus is said to be a definite contraindication as metastatic abscesses or pyemia may result. The liability of provoking a hemorrhage is also a contraindication.

Electricity as a therapeutic agent does not stand well with the medical profession and with good reason. Its use has been associated with much fraud so that one hesitates to take up the cudgel for electricity in any form. Diathermia, however, merits more extensive use than it has so far received.

OBITUARY

DR. EDWARD ELDEE AUSTIN

Dr. Edward Eldee Austin, a practicing physician of Minneapolis for forty years and a former member of the faculty of the medical school, University of Minnesota, died Thursday, August 10, 1923, at the age of 69 years.

Dr. Austin was born at Scotts, Michigan, in 1854. He was graduated in medicine from the University of Michigan at Ann Arbor in 1884, coming directly to Minneapolis, where he established offices for the practice of his profession.

Dr. Austin is survived by his widow, Mrs. Ella Austin, and two daughters, Miss Florence Austin and Mrs. John A. Dunn, all of Minneapolis.

DR. GEORGE EDGAR BENSON

Dr. George Edgar Benson, Minneapolis, died at his home Tuesday, July 31, 1923, following an illness of two months, at the age of 46 years.

Dr. Benson was a graduate of the medical school, University of Minnesota, class of 1901. On the day of his graduation he became associated with Dr. C. D. Wright, with whom he practiced for a period of twenty-two years.

Dr. Benson is survived by his widow, one son, Robert Benson; his parents, Mr. and Mrs. Aaron Benson, and a brother, Bernard Benson, all of Minneapolis.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

Notice is hereby given of an amendment to Article IX, Section 3, of the constitution of the Minnesota State Medical Association submitted to the House of Delegates at its meeting Saturday, October 14, 1922, in Minneapolis.

The section mentioned reads as follows:

"The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

It is proposed to change the section to read as follows:

"The officers of this Association shall be elected by the House of Delegates at a meeting to be held the second day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

MINNESOTA STATE MEDICAL MEETING

The annual state medical meeting will be held this year in St. Paul, October 10 to 12 inclusive. The Council will meet at 10 A. M. and the House of Delegates at 2 P. M., Wednesday, October 10. The scientific program will occupy all of Thursday and Friday, October 11 and 12, with the annual banquet Thursday evening.

Two distinguished guests, Dr. R. T. Woodyatt, Associate Professor in Medicine, Rush Medical College, Chicago, and Dr. E. A. Graham, Professor of Surgery, Washington University Medical School, St. Louis, Mo., will attend the meeting and will address the members following the banquet. They will also take part in the scientific program in the afternoon.

Dr. Frederick H. Neher, Lowry Bldg., St. Paul, has been placed in charge of arrangements for the convention by the Ramsey county society.

The final program will be mailed to each member of the Association in advance of the meeting. Following is the program in brief:

GENERAL MEETING

THURSDAY, OCTOBER 11, 1923

8 A. M.

Presidential Address—E. S. Judd, M.D., Rochester.

Why Has the Medical Profession Lost Its Position Once Held in the Esteem of the Public?—F. J. Savage, M.D., St. Paul; Senator J. D. Denegre, St. Paul.

6:30 P. M.—BANQUET

Address—R. T. Woodyatt, M.D., Chicago.

Address—Everts A. Graham, M.D., St. Louis.

Address—Chas. H. Mayo, M.D., Rochester.

FRIDAY, OCTOBER 12, 1923

2 P. M.

The Clinical Significance of Pain in the Area Supplied by the Fifth Cranial Nerve—H. L. Parker, M. D., Rochester.

Discussion by E. M. Hammes, M.D., St. Paul.

E. L. Gardner, M.D., Minneapolis.

E. E. McGibbon, D.D.S., Minneapolis.

Root Pains and General Diagnosis—H. W. Woltmann, M.D., Rochester.

Discussion by Arthur Hamilton, M.D., Minneapolis.

Surgical Considerations of Extra-Pleural Thoracoplasty—A. A. Law, M.D., Minneapolis.

Medical Considerations of Extra-Pleural Thoracoplasty—E. Mariette, M.D., Minneapolis.

Discussion by Everett K. Geer, M.D., St. Paul.

J. A. Myers, M.D., Minneapolis.

Work Being Done in Minnesota for the Hard of Hearing—Horace Newhart, M.D., Minneapolis.

Discussion by H. I. Lillie, M.D., Rochester.

Carl Larsen, M.D., St. Paul.

Report on the Survey of the Mid-Wife Situation in Minnesota—Ruth Boynton, M.D., Minneapolis.

SURGICAL SECTION

Symposium on Diseases of the Gall Bladder—

Differential Diagnosis—J. P. Schneider, M.D., Minneapolis.

Roentgenological Diagnosis—Frank Bissell, M.D., Minneapolis.

Surgical Diagnosis—Harry P. Ritchie, M.D., St. Paul.

Surgical Treatment—Arnold Schwyzer, M.D., St. Paul.

Discussion and Demonstration of Patients—Everts A. Graham, M.D., St. Louis.

Report of a Case of the Rupture of the Kidney—F. G. Watson, M.D., Worthington, Minn.

Discussion by E. A. Arnold, M. D., Adrian, Minn.

Gilbert J. Thomas, M.D., Minneapolis.

The Surgical Treatment and Results of Spinal Cord Tumors—A. W. Adson, M.D., Rochester.

Discussion by A. C. Strachauer, M.D., Minneapolis.

Arthur Sweeney, M.D., St. Paul.

J. Frank Corbett, M.D., Minneapolis.

The Rectum as a Factor in Chronic Focal Infections—W. A. Fansler, M.D., Minneapolis.

Discussion by L. A. Buie, M.D., Rochester.

Extra-Uterine Pregnancy—T. W. Weum, M.D., Minneapolis.

Discussion by F. L. Adair, M.D., Minneapolis.

R. D. Mussey, M.D., Rochester.

The Ear in General Medical Diagnosis—H. I. Little, M.D., Rochester.

Discussion by Horace Newhart, M.D., Minneapolis.

Charles Spratt, M.D., Minneapolis.

Actinomycosis of the Head and Neck—Gordon B. New, M.D., Rochester.

Discussion by E. Evans, M.D., La Crosse, Wis.

A. H. Sanford, M.D., Rochester.

Metastasis from Breast Cancer—W. A. Coventry, M.D., Duluth.

Apparent Deformity of the Pillars of the Fauces after Tonsillectomy—F. J. Pratt, M.D., Minneapolis.

Discussion by Wm. R. Murray, M.D., Minneapolis.

H. I. Lillie, M.D., Rochester.

Carl Larsen, M.D., St. Paul.

Headaches from the Standpoint of the Ophthalmologist—Paul Berrisford, M.D., St. Paul.

Obstetrics and the Country Practitioner—M. C. Bergheim, M.D., Hawley, Minn.

Discussion by J. C. Litzenberg, M.D., Minneapolis.

Oscar Locken, M.D., Crookston, Minn.

A. J. Chesley, M.D., Minneapolis.

Factors of Safety in Gastric Surgery—Donald C. Balfour, M.D., Rochester.

Discussion by A. C. Strachauer, M.D., Minneapolis.

Arnold Schwyzer, M.D., St. Paul.

Diagnosis and Treatment of Hydronephrosis—F. E. B. Foley, M.D., St. Paul.

Discussion by Warren Dennis, M.D., St. Paul.

Wm. F. Braasch, M.D., Rochester.

Symposium on Fractures of the Femur—

Anatomy and Mechanics of Fractures of the Femur—Wallace Cole, M.D., St. Paul.

Non-Operative Treatment — H. W. Meyerding, M.D., Rochester.

Operative Treatment—Charles A. Reed, M.D., Minneapolis.

Clinic by Alex Colvin, M.D., St. Paul.

MEDICAL SECTION

Hypertension in Pregnancy—F. L. Adair, M.D., Minneapolis.

Discussion by E. L. Gardner, M.D., Minneapolis.

A. G. Schulze, M.D., St. Paul.

Archibald McDonald, M.D., Duluth.

Thrombo-angitis Obliterans — H. W. Christianson, M.D., Wykoff, Minn.

Experiments in Renal Insufficiency with Special Reference to Blood Pressure and Fundus Changes—Hilding C. Anderson, M.D., Duluth.

A Preliminary Note: The Blood Serum in Pernicious Anemia with a Consideration of Certain Important Phenomena—Eugene Riggs, M.D., St. Paul.

Discussion by A. R. Hall, M.D., St. Paul.

Gilbert Kvitrud, M.D., St. Paul.

A. E. Mark, M.D., St. Paul.

Relation of Recurrent or Secondary Peptic Ulcers to Focal Infection—George B. Eusterman, M.D., Rochester.

Discussion by E. C. Rosenow, M.D., Rochester.

Robt. T. Riser, M.D., Minneapolis.

A. C. Strachauer, M.D., Minneapolis.

Concentrated Food in Infant Feeding—T. L. Birnberg, M.D., St. Paul.

Discussion by Edgar J. Huenekins, M.D., Minneapolis.

M. Seham, M.D., Minneapolis.

J. T. Christison, M.D., St. Paul.

The Diagnosis of Acute Appendicitis in Children—H. T. Helmholtz, M.D., Rochester.

Discussion by Frederick Rodda, M.D., Minneapolis.
E. S. Judd, M.D., Rochester.
Frederic Wm. Schlutz, M.D., Minneapolis.

Bronchial Asthma—John M. Lajoie, M.D., Minneapolis.

Discussion by C. B. Wright, M.D., Minneapolis.
F. H. K. Schaaf, M.D., Minneapolis.
C. N. Hensel, M.D., St. Paul.

Syphilitic Aortitis—F. A. Willius, M.D., Rochester.

Discussion by John Stokes, M.D., Rochester.
Henry Ulrich, M. D., Minneapolis.
Edward L. Tuohy, M.D., Duluth.

Massive Collapse of the Lung—T. J. Hirschboeck, M.D., Duluth.

Discussion by J. P. Schneider, M.D., Minneapolis.
Geo. D. Head, M.D., Minneapolis.

Focal Infection in Pernicious Anemia—H. M. Conner, M.D., Rochester.

Psycho-Neurosis—Edward J. Engberg, M.D., St. Paul.

Discussion by Chas. R. Ball, M.D., St. Paul.
A. S. Hamilton, M.D., Minneapolis.
H. Woltmann, M.D., Rochester.

Rest and Diet in the Treatment of Cardio-Vascular Disease—J. L. Crewe, M.D., Rochester.

Epidemic Encephalitis—E. M. Hammes, M.D., St. Paul.

Discussion by C. R. Ball, M.D., St. Paul.
A. S. Hamilton, M.D., Minneapolis.
H. Woltmann, M.D., Rochester.

Congenital Syphilis of the Nervous System with a Report on Juvenile Tabes in Twins—Frank Whitmore, M.D., St. Paul.

Chronic Nephrosis—Leo Rigler, M.D., Minneapolis; Harold Rypins, M.D., Minneapolis.

Symposium on Metabolism—

Metabolism—Walter M. Boothby, M.D., Rochester.
The Value of the Basal Metabolic Rate in General Medical Practice—A. E. Mark, M.D., St. Paul.
The Value of the Basal Metabolic Rate in Surgical Practice—T. L. Chapman, M.D., Duluth.

Later Developments of Value in the Estimation of the Basal Metabolic Rate—Max H. Hoffman, M.D., St. Paul.

Symposium on Insulin—

A General Discussion of the Preparation of Insulin and Its Value in Diabetes—Robert T. Woodyatt, M.D., Chicago.

The Treatment of Simple Cases of Diabetes—A. H. Beard, M.D., Minneapolis.

The Treatment of Emergencies in Diabetes—R. M. Wilder, M.D., Rochester.

Indications for the Use of Insulin—Edward L. Tuohy, M.D., Duluth.

Symposium on Non-Pulmonary Tuberculosis—

Cutaneous Manifestations of Tuberculosis — John H. Stokes, M.D., Rochester.

(Subject to be announced later)—Walter J. Marcley, M.D., Minneapolis.

Tuberculosis of the Bones and Joints—Carl C. Chatterton, M.D., St. Paul.

Genito-Urinary Tuberculosis—Herman C. Bumpus, M.D., Rochester.

TRI-STATE DISTRICT MEDICAL ASSOCIATION

The annual meeting of the Tri-State District Medical Association which includes the states of Iowa, Illinois, Wisconsin and Minnesota and districts of the surrounding states will take place at Des Moines, Iowa, October 29, 30, 31, and November 1, 1923.

The meeting will consist of scientific addresses, essays, symposiums and diagnostic clinics.

Membership in the State Association is sufficient qualification for attendance and participation in the program.

Headquarters of the assembly will be the Fort Des Moines Hotel and the sessions will be held in the new Woman's Club building.

Hotel accommodations should be made early by communicating with the Fort Des Moines Hotel or Dr. Walter L. Bierring, Des Moines, Ia.

The following is a partial list of the eminent members of the profession who have accepted places on the program:

Sir Robert A. Falconer, President of University of Toronto, Toronto, Canada.

Dr. Fred H. Albee, Prof. of Orthopedic Surgery, New York Post-Graduate Medical School, New York, N. Y.

Dr. Edward William Archibald, Associate Prof. of Clinical Surgery, University of McGill, Montreal, Canada.

Dr. William S. Baer, Associate Prof. of Orthopedic Surgery, Johns Hopkins University, Medical School, Baltimore, Md.

Dr. Willard Bartlett, St. Louis, Missouri.

Dr. Frederic Atwood Besley, Prof. of Surgery, Northwestern University, Medical School, Chicago, Ill.

Dr. Francis G. Blake, Prof. of Medicine, Yale University, School of Medicine, New Haven, Conn.

Dr. Hugh Cabot, Dean and Prof. of Surgery, University of Michigan, Medical School, Ann Arbor, Mich.

Dr. Richard Cabot, Prof. of Medicine, Harvard University, School of Medicine, Boston, Mass.

Dr. Frederic J. Cotton, Associate in Surgery, Harvard University, School of Medicine, Boston, Mass.

Dr. George W. Crile, Prof. of Surgery, Western Reserve University, School of Medicine, Cleveland, Ohio.

Dr. Byron B. Davis, Prof. of Clinical Surgery, University of Nebraska, School of Medicine, Omaha, Neb.

Dr. John B. Deaver, Prof. of Surgery, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Dr. Charles P. Emerson, Dean and Prof. of Medicine, Indiana University, School of Medicine, Indianapolis, Ind.

Dr. John F. Erdmann, Prof. of Surgery, New York Post-Graduate School of Medicine, New York, N. Y.

Dr. Robert E. Farr, Minneapolis, Minn.

Dr. Charles H. Frazier, Prof. of Neurosurgery, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

- Dr. Leonard Freeman, Prof. of Surgery, University of Colorado, School of Medicine, Denver, Colo.
- Dr. Willis D. Gatch, Prof. of Surgery, Indiana University, School of Medicine, Indianapolis, Ind.
- Dr. William A. Jenkins, Prof. of Medicine and Clinical Medicine, University of Louisville, School of Medicine, Louisville, Ky.
- Dr. Elliott P. Joslin, Prof. of Clinical Medicine, Harvard Medical School, Boston, Mass.
- Dr. Frank C. Knowles, Prof. of Dermatology, Jefferson Medical College, Philadelphia, Pa.
- Dr. Dean Lewis, Prof. of Surgery, Rush Medical College, Chicago, Ill.
- Dr. Charles F. Martin, Prof. of Medicine, McGill University, Faculty of Medicine, Montreal, Canada.
- Dr. Charles H. Mayo, Mayo Clinic, Rochester, Minn.
- Dr. William J. Mayo, Mayo Clinic, Rochester, Minn.
- Dr. Charles N. Meader, Dean and Prof. of Medicine, University of Colorado, School of Medicine, Denver, Colo.
- Dr. Oliver H. Pepper, Assistant Prof. of Medicine, University of Pennsylvania, School of Medicine, Philadelphia, Pa.
- Dr. Canby G. Robinson, Dean and Prof. of Medicine, Vanderbilt University, School of Medicine, Nashville, Tenn.
- Dr. Ernest Sachs, Prof. of Clinical Neurosurgery, Washington University, Medical School, St. Louis, Mo.
- Dr. Clarence L. Starr, Prof. of Surgery, University of Toronto, Faculty of Medicine, Toronto, Canada.
- Dr. William S. Thayer, Emeritus Prof. of Medicine, Johns Hopkins University, School of Medicine, Baltimore, Md.
- Dr. Allen Whipple, Prof. of Surgery, Columbia University, College of Physicians and Surgeons, New York, N. Y.
- Dr. Hugh H. Young, Clinical Prof. of Urology, Johns Hopkins University, Baltimore, Maryland.

MEDICAL RESEARCH AND ADVANCEMENT SYMPOSIUMS

Presented by the teaching staffs of the following universities:

- University of Iowa.
- University of Wisconsin.
- University of Illinois.
- University of Chicago.
- Northwestern University.
- Western Reserve University (Crile Clinic), Cleveland.
- University of Minnesota Graduate School of Medicine (Mayo Clinic), Rochester.
- University of Indiana.
- University of Michigan.

PROGRAM COMMITTEE

- Dr. Dean Lewis, Chicago, Illinois.
- Dr. E. Starr Judd, Rochester, Minnesota.
- Dr. Walter L. Bierring, Des Moines, Iowa.
- Dr. John L. Yates, Milwaukee, Wisconsin.

OFFICERS OF THE ASSOCIATION

- President of Clinics—Dr. William J. Mayo, Rochester, Minn.
- President—Dr. Horace M. Brown, Milwaukee, Wis.
- President-elect—Dr. Clifford U. Collins, Peoria, Ill.
- Vice-President, Wisconsin—Dr. Joseph S. Evans, Madison.

- Vice-President, Illinois—Dr. Edwin P. Sloan, Bloomington.
- Vice-President, Iowa—Dr. Frank M. Fuller, Keokuk.
- Managing-Director—Dr. William B. Peck, Freeport, Ill.
- Associate Managing-Director—Dr. J. Sheldon Clark, Freeport, Ill.
- Secretary—Dr. Edwin Henes, Jr., Milwaukee, Wis.
- Treasurer—Dr. Henry G. Langworthy, Dubuque, Iowa.

NOTE.—Requirement for admittance—membership in some State Medical Society.

MEDICAL WOMEN'S NATIONAL ASSOCIATION

The ninth annual meeting of the Medical Women's National Association was held in San Francisco, June 25 and 26, 1923, in conjunction with the American Medical Association meetings, Dr. Grace N. Kimball, president, presiding.

Dr. Kate Campbell Mead of Middletown, Connecticut, president-elect for 1923, was installed as president. Dr. Katherine C. Manion of Port Huron, Michigan, was chosen as president-elect. Other officers elected for the ensuing year are: First vice-president, Dr. Martha Welpton, San Diego, California; second vice-president, Dr. Marjory J. Potter, San Diego, California; third vice-president, Dr. Florence W. Duckering, Boston, Massachusetts; secretary, Dr. Jessie W. Fisher, Middletown, Connecticut; treasurer, Dr. L. Rosa H. Ganitt, Spartanburg, South Carolina.

The 1924 annual meeting of the Association will be held in Chicago.

PARK REGION MEDICAL SOCIETY

The summer meeting of the Park Region Medical Society was held Thursday, July 19, 1923, at the Otter Tail Sanatorium, Battle Lake, with a record attendance.

The program, which had for the general topic, "Tuberculosis in Its Different Phases," included the following papers:

- Dr. A. C. Baker, Fergus Falls—"Tuberculous Peritonitis."
- Dr. Frank Naegeli, Fergus Falls—"Tuberculosis in Pregnancy."

Dr. W. S. Broker, Battle Lake—"Present Concepts in Tuberculosis."

Dr. Robinson Bosworth of Saint Paul gave a general survey of the work being done in the state to combat tuberculosis.

A banquet in honor of the visiting physicians was given following the business session in the evening.

WASHINGTON COUNTY MEDICAL SOCIETY

A Ladies' Auxiliary to the Washington County Medical Society was organized on June 5 at the home of Mrs. W. R. Humphrey of Stillwater. It was decided to hold monthly meetings at the homes of the members. The following officers were elected: President, Mrs. F. G. Landeen; vice-president, Mrs. G. A. Newman, secretary-treasurer, Mrs. J. H. Haines. On July 13 a joint picnic was held with the medical society, an automobile trip being made to Prospect Park, Hudson, Wisconsin, where the ladies served dinner at the pavilion.

OF GENERAL INTEREST

Dr. J. H. Stokes has returned from a cruise along the coast of Maine.

Dr. and Mrs. W. B. Grise, Austin, have returned from a trip through northern Minnesota.

Dr. and Mrs. C. F. Brigham of St. Cloud recently returned from a cruise on the Great Lakes.

Dr. J. M. La Joie, Minneapolis, has returned from a trip to Duluth and northern Minnesota.

Dr. and Mrs. J. B. Clement of Lester Prairie have returned from a motor trip through the East.

Dr. H. B. Bailey, Ceylon, has returned from a trip to Duluth and the northern lake region.

Dr. and Mrs. O. J. Johnson and family, St. Peter, have returned from a motor trip to Illinois.

Dr. C. F. Andrews, formerly of the Mayo Clinic, Rochester, is now located in Denver, Colorado.

Dr. and Mrs. E. C. Hartley of Minneapolis recently returned from a trip on the Pacific coast.

Dr. and Mrs. Joseph Nicholson, Brainerd, have returned from an extended trip on the Pacific Coast.

Dr. and Mrs. E. W. Buckley, St. Paul, recently returned from a two weeks' visit at Madelaine Island.

Dr. and Mrs. J. F. Holbrook, Mankato, recently returned from a five weeks' trip along the Pacific coast.

Dr. F. C. Dolder and family, Eyota, have returned from a motor trip to Chicago and other eastern points.

Dr. Leo Adams, formerly of the St. Francis Hospital, La Crosse, Wisconsin, is now located at Rosemount.

Dr. Kenneth Caldwell has opened offices at 642 Lowry Building, St. Paul, for the practice of his profession.

Dr. and Mrs. F. J. Savage of St. Paul have returned from a vacation spent at Burntside Lodge, near Ely, Minnesota.

Dr. and Mrs. Paul D. Berrisford, St. Paul, have returned from a motor trip through the northern part of the state.

Dr. J. C. Harding has announced the opening of offices in the Lowry Building, St. Paul, for the practice of medicine.

Dr. William A. Meierding and son Billy recently returned from a motor trip to the Black Hills and Shepherd, Montana.

Dr. I. S. Benson and family of Willmar have returned from a trip through Yellowstone Park and other western points.

Dr. and Mrs. D. G. Colp of Minneapolis returned recently from a six weeks' trip to Dawson, Alaska, and other western points.

Dr. Harold J. Prendergast of St. Paul has become associated in the practice of medicine with Dr. R. A. Beise at Brainerd.

Dr. V. C. Thompson, while temporarily retaining his resi-

dence in Stillwater, has resumed his practice at Marine-on-St. Croix.

Dr. W. H. Replogle of Wabasha recently became the sole proprietor of the Guernsey Dairy Farm located near Wabasha.

Dr. and Mrs. Harold Rypins of Minneapolis have returned from a motor trip of several weeks to points in northern Minnesota.

Dr. and Mrs. I. H. Kiesling and little son of Nashauk have returned from a motor trip through the southern part of the state.

Dr. and Mrs. A. W. Ide, St. Paul, are now in Europe, where Dr. Ide will visit surgical clinics in England, France, Switzerland and Italy.

Dr. Carol Jamison of the Mayo Clinic, Rochester, will leave this month for Vellora, India, where she will continue the practice of medicine.

Dr. and Mrs. C. F. Brigham and son Charles, of St. Cloud, have returned from a motor trip through New York, New Jersey and Massachusetts.

Dr. P. J. Griffin has disposed of his practice at Fertile to Dr. A. L. Larson, formerly of Eveleth, and has located at Detroit for further practice.

Dr. E. C. Gaines and family of Buffalo Lake have returned from a motor trip through the East to New York, Philadelphia and Washington, D. C.

Dr. W. E. Hatch of Duluth has been appointed physician in charge of the venereal clinic at St. Mary's Hospital to follow Dr. O. A. Oredson, who recently resigned.

Dr. R. J. Josewski, who has served as an intern at the Ancker Hospital, St. Paul, is now practicing medicine as an associate of Dr. Demeter Kalinoff of Stillwater.

Dr. R. G. Andres, formerly of St. Paul, is now located for the practice of his profession in Spokane, Washington. His new address is 528 Fernwell Building, Spokane.

Dr. and Mrs. A. C. Heath and daughter Eve are in North Easton, Massachusetts, where they will spend several weeks as the guests of Mrs. Heath's mother, Mrs. J. B. Tarbox.

Dr. J. H. Wells, who for the past year has been a member of the staff of the Community Clinic of Rosemount, has taken over the practice formerly belonging to Dr. W. M. Dummer, Farmington.

Dr. F. G. Carter, who has been a member of the staff of the Ancker Hospital, St. Paul, for the past two years, is now associated in the practice of medicine with Dr. A. R. Colvin, 632 Lowry Building, St. Paul.

Dr. Eleanor Slater, who comes from Howard, Rhode Island, where she was a member of the staff of the State Hospital for Mental Diseases, has accepted a position on the staff of the State Hospital at Fergus Falls.

Dr. John J. Gelz, formerly of Richmond, who recently completed a post-graduate course in London and Paris in the treatment of the eye, ear, nose and throat, has located in St. Cloud for the practice of his specialty.

Dr. James B. Carey, Minneapolis, presented a paper on "The Diagnosis and Treatment of Pernicious Anemia" at the meeting of the Aberdeen, South Dakota, District Medical Society, held at Webster, South Dakota, recently.

Dr. John Anderson of the London School of Tropical Medicine, London, England, was a recent visitor at the Mayo Clinic, Rochester, stopping off on his way to Hong Kong, China, where he will take a chair in medicine at the University there.

Dr. R. A. Gowdy, Alexandria, will leave September 15 for Miami, Florida, where he will become associated with his brother, Dr. F. A. Gowdy, in the practice of medicine. Dr. P. E. Kierland, formerly of Harmony, will succeed Dr. Gowdy in his practice at Alexandria.

Dr. and Mrs. C. M. Jackson and daughters, the Misses Helen, Dorothy and Mary, Minneapolis, will leave this month for Washington, D. C., where Dr. Jackson, who is head of the department of anatomy, University of Minnesota, will spend his year's leave of absence as president of American Research in the Department of Medicine.

Dr. E. P. Lyon, dean of the medical school, University of Minnesota, together with Mrs. Lyon, will return from a trip to Europe the first part of September. Dr. Lyon attended a meeting of the Physiological Congress while in Edinburgh, Scotland, following which he and Mrs. Lyon made a tour of Scotland, England, Norway, Sweden and Denmark.

Dr. M. George Milan of Thief River Falls was elected president of the Minnesota Sanatorium Association at a meeting held in Wadena the latter part of July. Other officers elected were: First vice-president, Dr. L. G. Guyer, St. Paul; second vice-president, Dr. Harry Bendes, Minneapolis; secretary, Beatrice E. Lindberg, St. Paul.

Word has been received of the marriage of Dr. E. C. Joseph, formerly of the Mayo Clinic, Rochester, to Miss Louise Fineman, sister of Dr. S. Fineman of Rochester, which took place at the home of the bride's parents in Minneapolis, July 23, 1923. Following a wedding trip through the East, Dr. and Mrs. Joseph will be at home in New Zealand, where Dr. Joseph will practice surgery.

Dr. G. T. Nordin has returned to Minneapolis following a six weeks' course of study in Chicago under the tutelage of Dr. Edward S. Blaine regarding methods in x-ray diagnoses. Dr. Nordin also visited the deep x-ray therapy clinics of North Chicago and Mercy Hospitals, as well as Battle Creek Sanatorium, before returning home. Dr. Nordin has charge of the newly completed x-ray department at the Swedish Hospital, Minneapolis.

Dr. F. L. Bregel of Fairfax has disposed of his practice to Dr. William Dummer of Farmington and will spend a short time at the Mayo Clinic, Rochester, before taking up surgical work as an associate of Dr. O. H. Ternstrom at St. James. Dr. Bregel recently received notice from the national headquarters of the American Red Cross at Washington, D. C., that he had been awarded the Serbian Order of St. Sava for services to that country during the war.

The campaign for the proposed thousand dollar Midway Hospital to be erected on the site bounded by University

Avenue, St. Anthony Avenue, Aldine Street and Pierce Street, St. Paul, is now well under way. It is planned to have special departments in General Surgery, Medicine, Obstetrics, and Children's Diseases, with laboratories of Pathology, Blood Chemistry, Basal Metabolism, Sereology, Electro-Cardiography, X-Ray and Radium. Mr. H. H. Bigelow, 516 North Prior Avenue, St. Paul, is general chairman of the campaign for raising funds to establish the new hospital.

A course of lectures on Physio-Therapy, to be given by Dr. C. M. Sampson, will be held in Minneapolis, September 17 to 21, inclusive. There will be ten lectures, two lectures each day, 9 to 12 A. M. and 2 to 5 P. M., Monday to Friday, inclusive. One evening lecture will be given during the week at which will be shown a 6,000-foot moving picture film demonstrating physio-therapy work and technic as employed in the U. S. P. H. S. hospitals.

Dr. Sampson was formerly chief of physio-therapy service in the U. S. Army General Hospital, Lakewood, New Jersey, and later Reconstruction Officer, U. S. P. H. S. Hospitals, Fox Hills, Staten Island, New York. He is the author of a new work of over four hundred pages entitled "Physio-Therapy Technic." Dr. Sampson will pay especial attention to diathermia and ultra-violet light in his lectures.

Attendance to these lectures is to be restricted to ethical medical men, or their assistants where properly vouched for. The fee for the course will be twenty-five dollars. Anyone desiring to enroll for the course or to obtain further particulars should communicate with the Pengelly X-Ray Company, 220 La Salle Building, Minneapolis, Minn.

MINNESOTA STATE BOARD OF HEALTH ITEMS

The Division of Child Hygiene under the direction of Dr. E. C. Hartley has secured the full time assistance of Dr. Ruth Boynton through the courtesy of the University Health Service and the Medical School for the purpose of conducting a survey of the mid-wife situation in Minnesota, with statistical studies of records of births and maternal and infant deaths. The mid-wife situation has been investigated in the Twin Cities, the northeast, eastern and southwest sections of the state, and will be completed in the areas outside those mentioned some time this month. A request has been made that physicians and health officers who know of mid-wives, licensed or otherwise, send in information at once to the Division of Child Hygiene, University Campus, Minneapolis. A full report of the work done will be given at the annual meeting of the Minnesota State Medical Association in October.

The annual meeting of the Minnesota State Sanitary Conference will be held at the time of the Minnesota Educational Association's annual session in St. Paul this year. Dr. George S. Wattam, Warren, is president of the Conference, and Dr. O. W. Parker, Ely, vice-president. A complete program for this meeting will be published in the October issue.

The annual meeting of the Minnesota Public Health Association will be held Wednesday, October 31, 1923, in St. Paul.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ARLINGTON CHEMICAL CO.:

Pollen Extracts-Arlco: Arizona Ash; Arizona Cottonwood; Arizona Walnut; Bermuda Grass; Burr Ragweed; Burroweed; California Mugwort; Carelessweed; Carpet Sage; Creasewood; Hill Sage; Johnson Grass; Mexican Tea; Mountain Cedar; Orach; Pigweed; Prairie Ragweed; Russian Thistle; Sage Brush; Sea Blite; Shad Scale; Western Ragweed; Wild Sunflower.

LEDERLE ANTITOXIN LABORATORIES:

Pollen Antigens-Lederle: Annual Salt Bush; Bermuda Grass; Cocklebur; Johnson Grass; Mountain Cedar; Mugwort; Oak; Orchard Grass; Perennial Rye Grass; Rabbit Bush; Redroot Pigweed; Russian Thistle; Spiny Amaranth; Yellow Dock.

NATIONAL ANILINE CHEMICAL CO.:

Scarlet Red Medicinal-"National."

PARKE, DAVIS & Co.:

Protein Extracts Diagnostic-P. D. & Co.: Almond; Apple; Asparagus; Banana; Barley; Bean (Lima); Bean (Navy); Bean (String); Beef; Beef Serum; Beet; Blackberry; Black Pepper; Black Walnut; Bluefish; Brazil Nut; Buckwheat; Butternut; Cabbage; Cantaloupe; Carrot; Cat Hair; Cattle Hair; Celery; Cheese; Cherry; Chestnut; Chicken; Clam; Cocoa; Codfish; Coffee; Corn; Crab; Cucumber; Dog Hair; Duck; Duck Feathers; Egg (all proteins); Egg White; Egg Yolk; Eggplant; English Walnut; Fig; Garlic; Ginger; Goose; Goose Feathers; Grapefruit; Guinea-hen; Guinea-pig Hair; Haddock; Halibut; Herring; Hickory Nut; Horse Hair; Horse Serum; Juniper Pollen; Lamb; Lemon; Lettuce; Lobster; Mackerel; Milk (Cow's); (all proteins); Milk (Human); Mugwort (wormwood) Pollen; Mustard; Mutton; Oat Pollen; Orris Root; Oatmeal; Onion; Chicken Feathers; Orange; Oyster; Parsnip; Pea; Peach; Peanut; Pear; Pecan; Pepper (Sweet); Perch; Pike; Pineapple; Paprika; Plum; Pork; Prune; Potato (Sweet); Potato (White); Pumpkin; Rabbit Hair; Radish; Ragweed; Raspberry; Red Pepper; Redtop Pollen; Rhubarb; Rice; Russian Thistle Pollen; Rye; Rye Pollen; Sage; Salmon; Scallop; Shad; Sheep Wool; Shrimp; Smelt; Sole; Spinach; Squab; Squash; Strawberry; Tea; Timothy Pollen; Tomato; Turkey; Turnip; Veal; Watermelon; Wheat.

RADIUM EMANATION CORPORATION:

Radium Emanation (Radium Emanation Corporation).

E. R. SQUIBB & SONS:

Pollen Protein Allergens-Squibb; Ash; Hickory; Honeysuckle; Maple; Oak; Pine; Poplar.

Animal Epidermal Extract Allergens-Squibb: Beaver Fur; Chamois Skin; Civet Cat; Fox Fur; Kolinsky Fur; Leopard Fur; Mink Fur; Muskrat Fur; Mole Fur; Opossum Fur; Persian Cat (Angora) Fur;

Pony Fur; Raccoon Fur; Seal (Alaskan) Fur; Seal (Hudson) Fur; Sheep's Wool; Skunk Fur; Squirrel Fur.

Food Allergens-Squibb: Apricot; Butterfish; Cocoa; Coconut; Cottonseed; Duck; Fig; Flaxseed; Ginger; Goat; Guinea-hen; Hay (Alfalfa); Huckleberry; Lemon; Olive (ripe); Paprika; Pineapple; Pheasant; Pumpkin; Rabbit; Scallop; Sea-bass; Smelt; Sole; Tea; Tobacco; Vanilla; Whiting; Yeast.

WINTHROP CHEMICAL CO.:

Elixir of Luminal.

Sofos.—A mixture of sodium dihydrogen phosphate and sodium hydrogen carbonate (sodium bicarbonate), rendered stable by coating the particles of one of the constituents with disodium hydrogen phosphate. One part of sofos has the same phosphate value as 1.75 parts of sodium phosphate U. S. P. When sofos is treated with water, sodium phosphate (Na_2HPO_4) is formed and carbon dioxide is set free. Sofos has the physiologic action of sodium phosphate. It differs from the effervescent sodium phosphate preparations in that it is free from citrate or tartrate. General Chemical Co., New York.

Pollen Extracts-P. D. & Co.—Liquids obtained by extracting the proteins from the dried pollen of various species of plants. The products are standardized in "units," a unit being the extractive obtained from 0.002 mg. of pollen. For a discussion of the actions and uses of pollen preparations, see Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234. These preparations are marketed in packages for diagnostic use and in packages intended both for diagnostic use and for treatment. The following preparations are marketed: Pollen Extract Ragweed-P. D. & Co. and Pollen Extract Timothy-P. D. & Co. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 7, 1923, p. 27.)

Pollen Extracts-Arlco are marketed in sets of five vials representing graduated concentrations; also in concentrated solution in capillary tubes for diagnostic test. Arlington Chemical Co., New York. (Jour. A. M. A., July 28, 1923, p. 299.)

Sulpharsphenamine-Billon.—A brand of sulpharsphenamine-N. N. R. (see Jour. A. M. A., March 31, 1923, p. 919). It is marketed in ampules containing, respectively, 0.1 gm., 0.2 gm., 0.3 gm., 0.4 gm., 0.5 gm. and 0.6 gm. Powers-Weightman-Rosengarten Co., Philadelphia.

Radium Emanation (Radium Emanation Corporation).—The emanation, mechanically removed from a solution of a radium salt, in admixture with inert gases. It is supplied in sealed glass capillary tubes; each tube accompanied by a statement of the amount of radium emanation in terms of millicurie contained in it at the time of sale. The radiation from radium emanation as a therapeutic agent is analogous in all respects to that from radium and its salts, except that the activity decreases rapidly (see Radium and Radium Salts, New and Non-official Remedies, 1923, p. 255). The intensity of radium emanation decreases rapidly through decay (at the rate of about three-fourths per cent per hour). Radium Emanation Corporation, New York. (Jour. A. M. A., July 21, 1923, p. 213.)

PROPAGANDA FOR REFORM

Toxicity of Carbon Tetrachlorid.—Experiments on dogs demonstrated that large doses of carbon tetrachlorid produced degenerative changes in the liver and kidney of these animals. In view of these findings, and the experience of Lambert, it would appear advisable that the dose of carbon tetrachlorid be reduced in routine treatments. (Jour. A. M. A., July 7, 1923, p. 47.)

The Dreyer Tuberculosis Vaccine.—Newspapers have carried extended notices of the Dreyer so-called "defatted" tuberculosis vaccine. The experiments of Professor Dreyer of the Department of Pathology of Oxford University depend on the production of an antigen preparation from tubercle bacilli which are previously deprived of their waxy envelope by treatment with a formaldehyde solution. Animal experiments and some clinical trials have been reported which give ground for the hope that the new antigen may prove of value. Professor Dreyer's work does not offer sufficient evidence to warrant the conclusion as yet that any marked improvement has been made in the treatment of tuberculosis. (Jour. A. M. A., July 14, 1923, p. 138.)

Another Electronic Diagnosis and Treatment.—A report on the case of Mr. D., who was treated for carcinoma by C. E. Phelps, M.D., an Abrams disciple of Hartley, Iowa, is of interest because it represents, undoubtedly, what is duplicated in hundreds, if not thousands, of cases, in various parts of the country. The clinical report is by Dr. E. E. Munger of Spencer, Iowa, and the pathological report was made by Dr. E. R. LeCount of Chicago. Briefly, it is the story of a man in his seventies suffering from inoperable carcinoma of the stomach with implanted metastasis on various other abdominal organs. Dr. Munger diagnosed the condition when the patient first came to him. The diagnosis was verified at the Mayo Clinic. Then the man began taking the "Abrams Treatment." He was led to believe that he was being rapidly cured and was finally told that "everything had cleared up except a trace of colicsepsis." A month later he died. (Jour. A. M. A., July 28, 1923, p. 317.)

Ethyl Chlorid as a General Anesthetic.—The published mortality rate from ethyl chlorid anesthesia varies from 1 in 15,000, which is also the mortality rate of ether anesthesia, to about 1 in 6,000. From these statistics, therefore, one might judge that ethyl chlorid stands between ether and chloroform; but it is probably closer to the latter, which gives a mortality of about 1 in 3,500. Ethyl chlorid, however, is used for minor anesthesia, and it is unfair to compare it with the major anesthetics for prolonged operations. The fair comparison for ethyl chlorid is with nitrous oxid, the accepted mortality rate from which is about 1 death in 1,000,000 anesthetics. Hence, whether for induction of anesthesia or for minor anesthesia, ethyl chlorid is somewhere between 200 and 66 times more dangerous than nitrous oxid. It is, on the other hand, somewhat safer than chloroform. The essential danger from ethyl chlorid lies in the suddenness of the death, which may occur within half a minute from the beginning of the inhalation. The danger signs are such as may be overlooked by any but the most experienced anesthetist. (Jour. A. M. A., July 28, 1923, p. 320.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE SPONTANEOUS VARIABILITY OF BLOOD PRESSURE, AND THE EFFECTS OF DIET UPON HIGH BLOOD PRESSURE, WITH SPECIAL REFERENCE TO SODIUM CHLORIDE—Mosenthal and Short (Amer. Jour. of Med. Sc., April, 1923): The blood pressure readings in an individual vary considerably from time to time, and the observer must be familiar with the rise and fall of blood pressure readings that apparently occur in spontaneous fashion through changes in the emotional state of the patient. Before an accurate estimate can be made the psychic element must be eliminated. This has been emphasized in the past by various observers—Rolleston, Janeway and others. Tixier, in fact, made the observation that it was rare for the blood pressure readings to remain stationary as long as five minutes.

The authors made their investigations at the Vanderbilt Clinic, and it was noted that with rest there was nearly a constant tendency for the systolic pressure to fall, and in more marked degree, comparatively, than the diastolic pressure. Emotional stimuli, in their investigations, reveal a constant rise, to drop again in a few minutes when the emotional phase has passed away. The mechanism of this instability, according to Cannon, is due to the energy of the heart as measured by the volume of blood pumped into the arterial system, and the degree of resistance present in the terminal portion of the circulation.

There is a tendency for many writers to believe that there is an influence on the blood pressure through protein feeding. Publications advancing this theory have based their data chiefly upon general impressions and not upon properly obtained statistics.

Squier and Newburgh came to the conclusion that high protein diet over a short period had no effect on blood pressure. Their study included cases of essential hypertension as well as nephritis. The protein given was over 150 gms. per day, and signs of renal irritation appeared, but no alteration in the blood pressure.

The eminent Allbutt again and again placed patients with high blood pressure on a purin free diet, with no appreciable reduction in the blood pressure, and it has been pointed out by Williams that the height of the blood pressure bears no relationship to the amount of non-protein nitrogen in the blood.

The authors believe that the indiscriminate use of a carbohydrate diet in patients with high blood pressure has a tendency for the development of obesity and hypertension as a possible penalty.

Special mention is made in the article relative to the influence of sodium chloride on high blood pressure. In answer presumably to Allen's article in 1920, advocating salt restriction in the treatment of hypertension, they again

quote Allbutt, who found that cutting out salt from the diet of healthy persons for a few days produced no change in the pressures. McLester and Christian's work is quoted as contradictory to the work of Allen. The writers found that in only 2 out of 26 cases of hypertension was there a high chloride content in the blood. They believe this observation bears out the fact that hypertension and increased blood chloride do not go hand in hand.

In their experimental work to note the influence of the ingestion of rather large doses of salt on patients in influencing hypertension, they brought about as nearly as they could a minimal rate of pressure on the patients by rest and freedom from activity and emotional excitement. With the administration of sodium chloride in these patients in large doses, no influence was noted unless renal, cardiac or cerebral complications had occurred, which clinically contraindicate the use of sodium chloride, and in which in one instance at least produced alarming symptoms.

F. J. HIRSCHBOECK.

FURTHER OBSERVATIONS ON THE USE OF HIGH FAT DIETS IN THE TREATMENT OF DIABETES MELLITUS—L. H. Newburgh and P. L. Marsh (Arch. Int. Med., April 15, 1923): This latest report of the Michigan investigators on the use of a high fat, low protein, low carbohydrate diet in diabetes seems to confirm the good results reported by them in their earlier communications. They have now had an opportunity to study 190 cases treated by this method since its introduction in 1918.

In the present analysis, the writers have attempted to answer certain fundamental questions: (1) whether this type of diet fulfills the requirements of the disturbances in metabolism present in diabetes; (2) whether there are any definite advantages in their higher caloric diet as compared with the older undernutrition method; (3) whether the advantages, if present, are at the expense of increasing the downward progress of the disease.

In attempting to answer the first question, they report the effects of their diet (a) on glycosuria, (b) on acidosis, (c) on nitrogen balance, (d) on lipemia.

Glycosuria.—They were able to observe 176 cases for a satisfactory length of time. None failed to become sugar-free and all were discharged aglycosuric and on a maintenance diet. They cite several cases in which a severe undernutrition diet failed to relieve the glycosuria, and which responded to the high fat method. **Acidosis.**—Every patient, regardless of the severity of the diabetes or degree of acidosis, was placed on the diet. In no case did acidosis of any degree develop. They cite several records in which an acidosis already present disappeared on high fat diet.

Nitrogen Balance.—They have been able to satisfy the nitrogen requirement without producing glycosuria. **Lipemia.**—They demonstrate that hyperlipoidemia is not produced by the high fat diet, and further that an existing increased lipemia gradually falls to normal under this diet.

The advantages of the high fat, maintenance diet over the method of undernutrition are very definite. The exhaustion and extreme weakness associated with the undernutrition method are done away with. Instead of the diabetic becoming incapacitated and unable to lead an active life, their patients have been able to return to their former occupations.

The writers are very conservative in their statements as to whether these advantages may not be at the expense of increasing the progress of the disease. They seem to have evidence, however, which indicates that the prognosis by their method is no worse, at least, than that by any other diet. They derive their evidence (1) by a study of the effect of this diet on the carbohydrate tolerance and (2) by a comparison of the duration of life in their series with other series reported. They have seen no case in their series in which there was a reduction in tolerance. The comparison of their statistics as to duration of life with others indicates that there is no shortening of life under the high fat, low protein, low carbohydrate diet. This method, then, does not seem to be attended by any increased progress of the disease.

M. H. NATHANSON, M.D.

EPILEPSY AND GUNSHOT WOUNDS OF THE HEAD

—William Aldren Turner (Jour. of Neur. and Psych.): The author cites statistics from the American Civil War giving 13.7 per cent as the incidence of epilepsy, following injury. In the Franco-Prussian War, 4.3 per cent developed this complication. Holmes and Sargent are reported by him to have investigated 610 cases between two and eighteen months after the infliction of the wounds. They found 6 per cent suffering from compulsive seizures.

The British Ministry of Pensions Reports would show that, since the armistice, less than 5 per cent of 18,000 cases of gunshot wound to the head developed epilepsy.

Rawling is quoted, however, to have found 25 per cent of 452 cases of all varieties of gunshot wound of the head to have developed fits.

Turner suggests that the incidence of epilepsy has been underestimated.

The reviewer can subscribe to this opinion. It was found by him that a series of 100 cases gave 36 per cent which developed epilepsy. This review was made approximately four years after the wounds were inflicted.

Turner discusses the various types, causation, prognosis and treatment. Surgery in the old cases is treated at some length. Operative interference is not given much encouragement.

Tables of 48 cases are presented, giving the date of injury, subsequent condition of the wound, paralytic or other symptoms, as well as the onset character and course of epileptiform seizures.

J. C. MICHAEL.

THE DIAGNOSIS AND TREATMENT OF INTES-

TINAL OBSTRUCTION—Alexius McGlannan (Amer. Jour. of Med. Sc., June, 1923): Acute intestinal obstruction with attendant toxemia is the most fatal of all acute abdominal conditions. The advent of aseptic surgery and improved technique had little influence on the mortality statistics and any further improvement will have to be accomplished by operation at an earlier stage of the condition rather than in any technical procedure subsequent to its development.

More serious symptoms are due to the absorption of toxins from the obstructed bowel, and the term ileus has been used to designate the series of symptoms due to the

toxemia and the efforts of the gastro-intestinal organs to overcome the obstruction. In the event of vascular disturbance in the intestinal wall the intensity of the toxemia is very much greater. If the underlying cause of the obstruction can be recognized and removed early in the disease the severity of the toxic symptoms are diminished or their development is prevented. This is exemplified in early operations for strangulated hernia where the irreducible external swelling immediately centers the attention to the obstruction and brings the patient to immediate operation.

Characteristic symptoms at the onset are pain, constipation or diarrhea, and vomiting. The pain is paroxysmal in type with free intervals, and extremely severe, not relieved by vomiting, defecation, or even with the administration of opium. The constipation is oftentimes resistant to all treatment and the diarrheal condition may be associated with the passage of blood and mucous. The vomiting is of the classic, obstructive type, first gastric, later bilious, and finally intestinal. The blood pressure falls as the symptoms develop, indicating the onset of intoxication. As the condition progresses the pain becomes more intense unless gangrene develops, in which event it may be diminished. Vomiting is intestinal in type and the fluid is thin, acrid, voluminous and irritating. Peristalsis may be noted in the coils of the intestine. The distension, although at first regional, usually becomes general. In the later stages, gangrene of the bowel ensues, peritonitis, alteration of the function of the liver and kidneys, resulting in ultimate collapse from the toxemia and malfunction of the kidneys and liver.

Laboratory studies usually show a marked leukocytosis. The non-protein nitrogen of the blood is increased materially in the later stages. The urine shows albumin and casts frequently, and indol and skatol derivatives.

McGlannan mentions the various conditions which must be differentiated from intestinal obstruction and calls attention to the abdominal symptoms of thoracic disease, the crises of tabes, visceral crises of angioneurotic edema, acute dilatation of the stomach, adrenal disease, spastic ileus, mesenteric vascular occlusion, acute pancreatitis, ruptured abdominal viscus, torsion of a pedicled tumor, the onset of appendicitis, of cholecystitis or kidney colic, and peritonitis.

The treatment advised by McGlannan consists of the following measures: Enema should be given by a competent person and the stomach emptied by lavage. If there is no relief with these measures, an obstruction of the bowel is likely. After an hour these measures should be repeated, and if there is no change in the patient's condition, or the second lavage brings away duodenal contents, the diagnosis is more certain. In eighteen cases of post-operative intestinal obstruction, operation was performed after the diagnosis had been made on these symptoms. In every case a mechanical obstruction was found and relieved, and all these patients recovered. Corroborative evidence may be furnished by a rise in the quantity of non-protein nitrogen of the blood with tests made at four hour intervals. Cathartics and opiates should not be employed, but yet, in contradiction, the writer says that cathartics or opium may be used in the early stages in the period of doubt in the belief that it would aggravate the symptoms in existing obstruction and relieve the symptoms of a benign condition.

F. J. HIRSCHBOECK.

SIGNIFICANCE OF THE WILDBOLZ AUTO-URINE REACTION IN TUBERCULOSIS, WITH REPORT OF 100 CASES—Milton Smith Lewis (Amer. Jour. of Med. Sc., June, 1923): Wildbolz and his co-workers assume that when there is an active tuberculous process in the body, products of disintegration due to the tubercle bacilli are eliminated by the various secretory organs, and that there should be antigens excreted in the urine which if injected intracutaneously cause a certain definite type of reaction similar to that after the injection of tuberculin. A negative test indicates no area of activity in the body. Wildbolz stated that the above reaction does not occur in healthy individuals or in the urines of persons with tuberculous processes that have healed. In view of the fact that all of the tests for the activity of tuberculosis have been disappointing, Lewis performed the auto-urine test on 100 subjects in an effort to establish its value.

In summarizing his results it was noted that in 44 cases of active tuberculosis, 26 resulted in a positive reaction and 18 in a negative reaction. In 4 inactive or arrested cases, 3 were reported as positive and 1 negative to the auto-urine test. In 24 non-tuberculous pulmonary conditions, 14 gave a positive reaction with the auto-urine test and 10 a negative reaction. Of 22 apparently healthy cases, and with various diseases outside of the respiratory tract, 11 gave a positive reaction and 11 a negative reaction.

The writer concludes therefore that healthy persons and persons afflicted with non-tuberculous disease may show a positive reaction as well as persons with healed tuberculous processes. When contrasted with the tuberculin test the results were extremely variable, and Lewis believes that positive result is not proof that there are antigens in the urine. The writer deprecates its use, as it has diagnostically little significance and it is not practical for everyday use.

F. J. HIRSCHBOECK.

TOLYSIN IN ACUTE RHEUMATIC FEVER AND OTHER CONDITIONS—Barbour, Lozinsky and Clements (Amer. Jour. of Med. Sc., May, 1923): Tolsyn has received recognition recently as an improvement over the salicylates in acute rheumatic fever and other conditions. It appears to be innocuous in large doses, and is less irritating than cinchophen or the salicylates.

The observers treated patients with acute and subacute rheumatic fever and other cases of arthritis, and also made observations on tolsyn as an antipyretic and analgesic. In twelve cases of rheumatic fever it was found to be a very efficient therapeutic agent. The usual dose required for the complete relief of symptoms was 10 to 16 gms. As a satisfactory routine, they suggest giving 2 gms. every two hours for three doses, followed by 2 gms. every four hours. No gastric symptoms were elicited, and albuminuria was increased in only one case.

Testing out the toxicity, two different patients received 50 gms. of tolsyn within eight days without any untoward symptoms whatever. In six patients out of seven with arthritis of other types satisfactory results were obtained. In acute tonsillitis it was found to have a good antipyretic action, and in ordinary colds and headaches it appeared to

act as well as aspirin, but more slowly, and with an indication for somewhat larger doses.

The report of the authors would suggest its use as a substitute for salicylate medication, particularly in acute rheumatic fever.

F. J. HIRSCHBOECK.

TOXIC POLYNEURITIS—Wilfred Harris (Brain, Vol. XLV, Parts III and IV): In this contribution the author dwells particularly on the etiology of the lesser known types, many of which have an obscure origin. An etiological rather than a pathological classification representing the present state of our knowledge is indicated as follows:

(1) Those dependent on the absorption of poisons introduced primarily within the body.

(2) Those due to autotoxaemia, or to poisons developed primarily within the body.

(3) Those due to infections of an organismal nature.

(4) Those occurring in cachectic states.

Attention is called to the fact that the term toxic polyneuritis is employed most frequently when the infective or toxic agent is not clearly established.

The less common causes mentioned, with case reports, are:

1. Silver
2. Carbon bisulphide
3. Carbon monoxide
4. Rheumatic polyneuritis
5. Chloretone
6. Septicemic
7. Typhoid
8. Acute febrile form
9. Syphilitic
10. Tubercle
11. Leukaemic
12. Carcinomatous
13. Autotoxemic
14. Beri-beri
15. Puerperal
16. Haematoporphyriuric

This latter form is discussed at some length. The factor of sulfonal and also trional medication prior to the onset of this type is brought out as the probable causative factor in case reports.

J. C. MICHAEL.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

DOUBLE KIDNEY (CONTINUED)—Daniel N. Eisen-drath (Ann. of Surg., Vol. 77, No. 5): In 80 clinical cases of double kidney which have been collected, the incidence of different diseases for which operation was performed is about the same as one expects to find in single kidney cases. (A table is given.)

Preoperative diagnosis was made in 32 (40 per cent) of the 80 collected cases. Pyelography and opaque catheters were used in 23 cases; in 7 cases observation revealed two ureteral orifices on one or both sides of the bladder; in 2 cases it was noted that alternately clear and turbid urine was obtained by the use of ureteral catheters.

A specific diagnosis of double kidney is dependent upon the following data:

1. The finding of two ureteral orifices on one or both sides of the bladder.

2. The presence of an ectopic orifice or other form of ending of one or both ureters of a double kidney.

3. Alternate clear and turbid urine obtained from one kidney.

4. Ureteropyelography if only one ureteral orifice is present on each side.

A communication may exist between the two ureters or renal pelves, and is important in diagnosis and treatment.

Treatment.—The same principles are used in treating diseases of double kidney as those used in cases of diseased single kidney.

Heminephrectomy should be done if possible. Whether this can be performed depends on the blood supply of the remaining half and the possibility of separating the diseased half and its ureter from the normal half.

There are three types of blood supply, namely:

1. A single artery and accompanying vein for both halves.

2. Artery and vein for each half, one of which arteries may be an accessory vessel.

3. Multiple arteries for both halves.

In 35 cases recorded, the following was found:

1. One artery for both halves—15 (43%).

2. One artery for each half—15 (43%).

3. Three arteries for both halves—5 (14%).

Before a heminephrectomy is decided upon the pedicle must be exposed to see if a sufficient blood supply can be left for the remaining half.

There are certain conditions which indicate primary complete nephrectomy.

1. Infection, especially hematogenous involving both halves of the kidney.

2. Tuberculosis or malignant neoplasms, unless there is a complete separation of the two halves.

3. Communication between the two pelves or impossibility of separation of the pelves.

4. Impossibility of separation of ureters if they lie in one sheath.

5. Advanced disease of both halves.

Many cases of the 80 reported in the literature should have had a heminephrectomy instead of complete primary nephrectomy. Fifteen cases of the 80 had a primary heminephrectomy, and of these three were followed by removal of the remaining half. It is probable that a number of these cases had to be operated on again later.

Groups of tables are given in this article, which contain all the available information in the reported cases.

WILLIAM P. HERBST.

PRIMARY CARCINOMA OF THE MALE URETHRA—Herman L. Kretschmer (Arch. of Surg., May, 1923): Carcinoma of the male urethra is a rare disease. Eighty

cases are reported in this article, forty-two of which have been reported previously.

One of the author's own cases, which is reported, is of especial interest in that it was a papillary carcinoma, which is a very unusual type of growth in the urethra. In this case there were also many benign papillomata studding the urethra.

Primary carcinoma of the male urethra is classified as follows:

1. Squamous-cell carcinoma.
2. Columnar-cell carcinoma.
3. Papillary carcinoma.
4. Adenocarcinoma.

The squamous cell growth occurs most frequently, and 55 of the 80 reported cases were of this type.

Adenocarcinoma originates in Cowper glands, with later invasion of the urethra.

Like other carcinomata, carcinoma of the urethra occurs most frequently in patients of advanced age. Eighteen of the cases reported occurred in the fifth decade; the youngest was 39 years of age, and the two oldest were in the seventh decade.

Stricture is mentioned as a possible etiological factor. Also, previous venereal disease and trauma (mechanical or chemical) are given as factors in the etiology.

The symptoms of this disease are divided into four stages, as follows:

1. Symptoms of stricture with urethral discharge.
2. Local tumor.
3. Infection with formation of periurethral abscess. The malignant nature of this condition can be readily overlooked if seen in this stage.
4. Fistula formation, usually on under surface of penis, but may be found on any surface.

Treatment.—Amputation of the penis, with transplantation of the urethra following complete extirpation of the inguinal glands, is the preferred method of treatment.

Radium is used with value if the diagnosis is made when the tumor is small, and before there is involvement of the regional lymph glands.

The last report from the author's patient was received two years after operation, and there had been no signs of recurrence as yet.

WILLIAM P. HERBST.

PEDIATRICS

SUPERVISORS:

FREDERICK C. RODDA,
CHILDREN'S CLINIC, MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

THE ANEMIAS OF INFANCY; CAUSES AND TREATMENT—Charles Herrman (Arch. of Ped., June, 1923): The function of the blood forming system is two-fold, blood production and blood destruction. In order to include the latter, Krumbhaar has suggested the term hemolyto-poietic system. The organs or structures making up this system are the bone marrow, spleen, liver, lymph nodes, the reticulo-

endothelial system. The chief function of the bone marrow appears to be the production of red blood cells, polynuclear leucocytes and platelets; that of the lymph nodes, the production of lymphocytes. The chief function of the spleen is apparently to take up effete material, more especially degenerated, useless red blood cells.

The appearance of unusual forms of blood cells has not the great significance which it has in later life; the presence of normoblasts and megaloblasts does not justify a diagnosis of pernicious anemia, nor the appearance of young forms of white cells that of leukemia.

Among the chief agents acting from without is improper feeding, primarily a too exclusive milk diet. Repeated mild infections, of which those of the rhinopharynx are in infants the most common, play an important part in producing and in increasing an already existing anemia. A very large percentage of all anemic infants show rachitic manifestations.

Many European authors, more especially the French, believe that most of the severe secondary anemias of infants, which are associated with an enlarged spleen, are due to syphilis. We may briefly consider the two important clinical types. First, in the simple anemia, there is a yellowish pallor, so that the mothers often bring babies with the statement that they are yellow rather than pale. The severe type of secondary anemia, the so-called von Jaksch's anemia, or anemia pseudoleukemica infantum, is usually seen in infants toward the end of the first year of life. They present a marked waxy pallor of the skin, and pale mucous membranes; they may also show slight edema.

Pernicious anemia is exceedingly rare in infants. Acute lymphatic leukemia occurs in infants, but the blood picture is entirely different. Chronic lymphatic leukemia is exceedingly rare in infants.

Prognosis.—Barring intercurrent infections, especially those of the upper respiratory tract, the prognosis even in the severe type is not unfavorable. On account of the great danger following such infections, home treatment is preferable to hospital treatment. Most of the deaths are due to pneumonia, so that every possible precaution should be taken to prevent contact infection with those diseases, measles, influenza, whooping-cough, in which the lungs are often affected.

Treatment.—If the patient is rachitic, exposure to sunlight, and the administration of cod-liver oil and phosphorus, are indicated; if syphilitic, salvarsan and mercury are given. Foci of infection should be removed. Breast milk should be procured if possible. The dietetic treatment is most important. Beef juice, vegetable and fruit juices should be added early to the diet. Iron is especially valuable in the patients whose blood is of the chlorotic type, as it acts primarily by stimulating the bone marrow. The saccharated carbonate is as valuable as the newer preparations. Some patients do better with a combination of iron with arsenic. In a few cases which fail to respond to iron and arsenic, small doses of thyroid extract may be tried. Transfusion is indicated in some cases.

Splenectomy finds its greatest usefulness in those forms of anemia with increased blood destruction, notably in hemolytic anemia. The removal of the spleen appears to have a stimulating effect on the bone marrow. In cases where the removal of the spleen is considered, the following course should be pursued: A transfusion should be given. If

after ten to fourteen days the blood returns to its previous condition, a second transfusion should be given. If after fourteen days there is again a return to the low hemoglobin percentage and red blood count, splenectomy, preceded by a transfusion, should be advised.

R. N. ANDREWS.

CAUSES OF INTRACRANIAL HEMORRHAGE—

Ogden F. Conkey (Arch. of Ped., April, 1923): Intracranial injury accompanied by hemorrhage is one of the most frequent causes of stillbirths and death of the new-born. A most notable feature in the consideration of these deaths is that a large percentage of the infants showing intracranial hemorrhage are *premature*.

Rodda, who has made very complete studies of the coagulation and bleeding times in the new-born, states that more than 25 per cent of infants afflicted with cerebral hemorrhage show hemorrhages in other parts of the body.

With all respect for the work which has been done in this connection, the author believes there is some danger of overstressing the hemorrhagic disease theory to the exclusion of the mechanical and traumatic factors that are present in both spontaneous and operative deliveries. Hemorrhagic neonatorum must not become a cloak to cover up birth injuries which accompany obstetrical efforts.

Writing on the subject of birth traumatism of the brain, P. Schwartz reports in 65 per cent of all new-born dying within the first five months he found effects of birth trauma, indicated by hemorrhages and softening that could be discerned with the naked eye.

Of the mechanical factors concerned in the production of lacerations of the dura, falx, and tentorium, lateral compression of the skull with overlapping of the parietal bones is the most important.

Examination of hospital records shows that many cerebral hemorrhages occur in what were apparently short normal labors. Here it is believed that the head has been subjected to some sudden, severe pressure, such as might happen if it were forced quickly through an incompletely dilated cervix or rigid perineum.

The rôle played by asphyxia in the production of brain hemorrhages has been a much disputed one. Any number of causes may act to bring this about, such as pressure on the cord, decreased placental area due to a tonic uterus, or partial separation of the placenta associated with previa, infarctions, trauma, etc. It is not unreasonable to assume that some of the intracranial hemorrhages in Cesarean babies are caused by asphyxia rather than hemorrhagic disease, and this would be more apparent if the indications for Cesarean section were reported in all instances. Increased CO₂ in the blood is followed by engorgement and increased tension in the vessels. When this is extreme, rupture occurs in the terminal veins and arterioles.

Breech deliveries cause more intracranial injuries than any of the other complications of labor. It was formerly thought that most of these deaths resulted from asphyxia caused by pressure on the cord by the aftercoming head, but we now know that tentorial lacerations with hemorrhage are the lesions most often responsible.

Too vigorous methods of resuscitation should be mentioned prominently as a contributing etiological factor in

intracranial hemorrhage. The violent slapping and swinging of asphyxiated infants has hastened death in innumerable instances. The average case requires only a gentle friction of the skin with a towel or a few drops of water sprinkled on the chest. If artificial respiration is indicated, it can be carried out properly and efficiently without swinging or suspending the child by its feet with the head down. When asphyxia persists after the milder methods of resuscitation have been tried, one should realize that he is probably dealing with an intracranial injury. Any measures that increase cerebral congestion will only lessen the chances of recovery.

A better understanding and more skillful handling of the complications of labor will result in fewer birth injuries and hemorrhagic lesions of the brains.

R. N. ANDREWS.

OBESEITY IN CHILDREN (Medecine, Paris, August, 1922. Arch. of Ped., April, 1923): Apert comments on the light thrown on obesity by endocrinology, especially in children. Except in girls approaching puberty, obesity in children over 6 is abnormal, and requires treatment. But the mechanism varies in each case, and treatment must vary in consequence. As a rule, the obesity is the result of some upset in endocrine balance, and treatment must aim to restore the harmonious concerted action. This requires prudent guidance, as he shows by some typical examples. The big, active obese child should eat less meat and fats and make up with fruits and vegetables. The pale, languid obese child should be given substantial food in small compass; with iron and arsenic and organotherapy. Not the scales but the girth of the abdomen should be the guide here. Thyroid treatment, if needed, should be given very cautiously, only three times a week and in small doses, but it may have to be kept up a long time. He adds that the effect of any measures which cause rapid reduction in weight is only ephemeral, and it is obtained only at the expense of the general health. This is the case in children even more than in adults.

R. N. ANDREWS.

OXYGEN THERAPY IN PREMATURE BABIES WITH ANOXEMIA—Harry Bakwin (Amer. Jour. of Dis. of Children, February, 1923): By anoxemia is meant a condition in which the oxygen pressure in the systemic capillaries is abnormally diminished. Cyanosis is distinct evidence of anoxemia. It occurs frequently in premature babies and may be associated with a number of different conditions, such as cerebral hemorrhage, pneumonia, sepsis and atelectoses. In these babies cyanotic attacks start soon after birth and recur more or less frequently for several days. If the baby lives through this period the attacks usually cease. Death, however, is an all too frequent sequel. The cyanosis in premature babies is usually extreme and is accompanied, as in adults, by an increase in the oxygen unsaturation of the blood. During the cyanotic attack the respirations become progressively slower and finally cease. The heart also beats slower and becomes weaker; but it usually continues to beat for several minutes after respiration has ceased.

In small, frail babies full expansion of the lungs may be

delayed for several weeks. As a consequence, the blood flowing through the walls of the collapsed alveoli is poorly or not at all oxygenated, whereas in the expanded portion of the lungs the blood is normally arterIALIZED. It is a matter of common clinical observation that the breathing in prematurely born infants is irregular both in rate and depth. Pembrey and Allen have shown that Cheyne-Stokes breathing may be abolished by giving oxygen, thereby proving, Haldane believes, that this type of breathing is due to oxygen want.

In prematurely born infants oxygen may be given effectively by means of two fine rubber catheters inserted into the nostrils. The catheters are well lubricated and connected to the oxygen tank by means of a Y tube. The oxygen may also be given through a rubber tube about 1 cm. in diameter, inserted into the mouth.

During the past three years a large number of cyanotic premature infants have been treated with oxygen inhalations. The response to the oxygen is usually prompt, and but a few minutes are necessary before the cyanosis disappears and the character of the respirations changes. It is difficult to gauge with any degree of accuracy the permanent value of oxygen to the babies. It did seem that, in general, when oxygen was administered early, the subsequent cyanotic attacks were fewer in number and more readily amenable to treatment.

R. N. ANDREWS.

BRAIN TUMOR IN YOUNG CHILDREN—Martha Wollstein and Frederic H. Bartlett (*Amer. Jour. of Dis. of Children*, April, 1923): In seven cases of tumor of the brain in children between the ages of 2 weeks and 3 years, the average age was 15 months. All the tumors were gliomatous in type. Two were supratentorial and five were infratentorial. Of the supratentorial tumors, one occupied the left cerebral hemisphere and was congenital in origin. The other occupied the basal ganglia. In the five infratentorial tumors the vermis of the cerebellum was involved. The growth involved the right cerebellar hemisphere in four and the left hemisphere in only one instance. The medulla and the pons were infiltrated in two cases, and the right cerebellopontile peduncle was involved in two instances. The upper cervical cord was compressed in three of the cases. Hydrocephalus was present in each of the seven cases. The most striking feature of the symptomatology is the variability in physical signs. Convulsions were absent in all cases except one in which a convulsion occurred just before death. Vomiting did not appear as a significant symptom in any of the cases. The spinal fluids showed nothing that is distinctive. Xanthochromia was present in only one case in which there was a cerebral hernia.

R. N. ANDREWS.

TUBERCULOSIS IN CHILDREN FROM THE STAND-POINT OF THE PEDIATRIST—Morse John Lovett (*Arch. of Ped.*, March, 1923): The author believes that the relative frequency of infection with the human or bovine type of organism is of no practical importance, as both must be guarded against. The relative frequency of infection through the respiratory and digestive tracts likewise is of little practical importance as both must be guarded against.

The Pirquet test is of great value in infants; it is of less value in older children because of the increasing frequency of infection with age. A negative test is of great importance as it practically rules out tuberculosis unless the child is overwhelmed with infection. It may be absent in acute miliary tuberculosis, in tuberculous meningitis and sometimes in tuberculous peritonitis. In the author's experience, tuberculosis is a rare disease in infancy and childhood, both in private and hospital practice. In 1921, in the Children's Hospital, Boston, the diagnosis of tuberculosis in any form was made less than 100 times in over 10,000 diagnoses in the Out-Patient Department. The preventive treatment is the most important. After the disease has developed, the treatment consists of rest, food, fresh air, both day and night, and all the sunlight possible. The Rollier treatment is very useful in bone and peritoneal tuberculosis; no confidence can be placed in drug treatment except for relief of symptoms; the writer has had no personal experience with tuberculin treatment, but had been disappointed in what he has seen of it.

R. N. ANDREWS.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:

ARCHIBALD L. McDONALD,

FIDELITY BLDG., DULUTH

ALBERT G. SCHULZE,

LOWRY BLDG., ST. PAUL

DRY LABOR—John Osborn Polak (*Amer. Jour. of Ob. and Gyn.*, May, 1923): The author groups his cases under three headings: first, premature ruptures of the membranes before labor with no pelvic disproportion; second, rupture of the membranes at the beginning of labor, cervix undilated, presenting part engaged, normal pelvis; third, dry labor, undilated cervix, minor degree of pelvic disproportion. It is generally admitted the condition adds to the maternal risk, from general and uterine exhaustion, trauma, possible operative interference and infection. The fetal mortality is always increased, due to various factors. The principal obstruction is an undilated cervix. While it is generally agreed the physiologic dilatation of the soft parts is preferable, artificial assistance is likely to be indicated in some of these cases. Polak describes the various methods which may be adopted. First, dilating bags are uncertain, may displace the presenting part or allow prolapse of the cord, and may predispose a contraction ring. Operative interference is much more frequent, hence there is added risk of infection or injury. Manual dilatation is usually associated with extensive laceration and frequently necessitates operative delivery. The use of morphine is of distinct value in a number of cases, but it is not always successful. The vaginal bag, introduced and filled in such a manner as to exert uniform pressure on the cervix, is commended. Polak describes a method of packing the vagina with pads of boiled cotton moistened in sterile boroglyceride. This method in selected cases has given most promising results. Surgical incision of the cervix should be reserved for a

limited number of cases. In the first group of cases, Polak advises expectant treatment until labor has begun. Surgical interference is warranted in exceptional cases only. In the second group, where the cervix is obliterated and thin, morphine after a short delay will usually bring about dilatation. If the cervix is thick and edematous, Polak advises the use of the boroglyceride packs and morphine or scopolamin hypodermically. In the third group of cases, with relative disproportion, careful discrimination is necessary. Long delay or test of labor is to be avoided. Abdominal delivery in such instances imposes an increased maternal risk. There are two clinical dangers which must be counteracted as far as possible, namely infection and post-operative uterine relaxation. For the first he advises cleansing of the vagina with iodine; and for the second intrauterine iodoform gauze pack, which is later expelled or removed through the cervix.

ARCHIBALD L. McDONALD.

MORTALITY IN CÆSAREAN SECTION—J. O. Polak (Surg., Gyn. and Ob., page 115, July, 1923): The incidence of Cæsarean section at Hopkins is 1 in 110 labors (20,000 cases); at Long Island, 1 in 120 labors, 5,000 cases. Potter of Buffalo, 1 in 14, 1921 series; 1 in 11, 1922 series.

Cæsarean section is too freely done.

The indications are:

(1) *Absolute*

- (a) In pelvis below 7 cm. where other means are impractical.
- (b) Cancer of the cervix.

(2) *Relative*

- (a) Misfits after a test of labor. Fault may be in pelvis, child or soft parts.
- (b) Certain cases of central placenta prævia which are clean and without severe blood loss.
- (c) Eclampsia.
- (d) Undilated soft parts after extensive plastic operations.
- (e) Prolapse of cord at term in old primipari with membranes ruptured and cervix unprepared.
- (f) Dystocia from previous retroversion operations.
- (g) Some complicating tumors obstructing the pelvis.
- (h) Accidental separation of placenta with hemorrhage not controlled by conservative measures.
- (i) Ruptured uterus.

Duration of labor and infection influence results. Bacteria are always present after five days.

Operation of choice is transperitoneal coeliotomy. A low incision is used because fundal scars are dangerous. The uterus is not everted and the incision is limited by two sutures placed in uterine wall about six inches apart. Hemorrhage is controlled and retraction secured by means of ergot and intrauterine pack. The wound is sutured and peritonealization is done.

Section is more dangerous than other clean, elective abdominal procedures because prenatal work is not routine, interpartum care casual, and there are pathogenic bacteria present in every uterus before the end of the first week.

W. P. HERBST.

A ROUTINE TREATMENT FOR HYPEREMESIS GRAVIDARUM—Edward Speidel (Amer. Jour. of Ob. and Gyn., May, 1923): The author describes the feasibility of adopting a standard treatment for such a condition, the true nature of which is undetermined. He assumes as the most probable cause a carbohydrate deficiency, as explained in the articles of Titus and Givens, which articles have previously been reviewed in this column. He feels that their test (Titus and Givens), based on the blood sugar content as affected by intravenous injection of glucose, may be accepted as of prognostic value. He does not place great practical importance on William's determination of the ammonia coefficient in the urine. He has adopted the following routine in a series of twenty-four cases during the last two years with good results in all but two instances:

First, hospital treatment and isolation from the family must be carried out. There should be plenty of fresh air and sunshine, the eyes being protected with smoked glasses. Food and fluids by mouth are withheld during the first part of the treatment. The daily routine is as follows:

At 7 a.m., colon irrigation with a gallon of warm water containing 2 tablespoonfuls of sodium bicarbonate. One pint of this solution is retained. At 8, 12 a.m., 4 and 8 p.m., a feeding solution is given by rectum to be retained. This solution is made up of 50 gms. of glucose, 100 c.c. of panopton, 20 gms. of sodium bicarbonate, 60 gr. of sodium bromide, or occasionally 30 gr. of chloral. One or two ampules of corpus luteum are given daily.

This routine is followed for three days, after which 500 c.c. of sterile 10 per cent glucose solution is given intravenously. The intravenous injection is repeated on the sixth day. The general routine is followed for about nine days, when feeding by mouth is begun, first Holland rusk or shredded wheat biscuit, then cereals.

ARCHIBALD L. McDONALD.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

PHYSIOTHERAPY TECHNIC: A MANUAL OF APPLIED PHYSICS. C. M. Sampson, M.D., formerly of the Physiotherapy Service, Walter Reed U. S. Army General Hospital, Washington, D. C., etc. 443 pages, 85 illustrations. St. Louis: C. V. Mosby & Co., 1923. Cloth, \$6.50.

PRACTICAL DIETETICS. Alida Frances Pattee, graduate Department of Household Arts, State Normal School, Framingham, Mass.; former instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital, New York City, etc. 14th edition, completely revised. 687 pages. A. F. Pattee, publisher, 134 South First Avenue, Mount Vernon, N. Y., 1923. Cloth, \$2.60.

THE FORM AND FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM. An introduction to the Study of Nervous Diseases by Frederick Tilney, M.D., Ph.D., and Henry Alsop Riley, A.M., M.D. 1,019 pages. 2nd edition. New York: Paul B. Hoeber, 1923. Cloth, \$12.00.

The second edition of this book differs in only a few

points from its predecessor, which met with such well merited popularity.

The book comprehends even more than its title implies inasmuch as its scope is greater than a stereotyped exposition of the anatomy and physiology of the nervous system.

Many students of anatomical neurology have been impressed with the intimate relationship existing between the nuclei lying in the brain stem and have pondered over their positions and the possible relation of location to function. In considering the anatomy of this portion of the brain it is impossible to escape forming a conception of the important rôle it plays in governing the vital processes of life. No doubt this thought occurred to the authors and influenced them in their decision to combine the subject of anatomy with that of the physiology of the entire nervous system. In attempting this they have followed the principle laid down by Schaxel in his pamphlet entitled "Die Allgemeine und Experimentelle Biologie—Die der Neuordnung des Medizinischen Studiums," which states that the only logical method of arriving at a complete understanding of an organ or group of organs is to trace them through their racial as well as embryological development, both physiological and anatomical. In doing this the authors have not only traced the anatomical development but have succeeded in making a logical exposition of the various functions which many of the nervous elements govern in the lower forms before arriving at the maturity displayed in man.

The book is clearly written and is an adornment to American scholarship.

FRANK WHITMORE, M.D.

CEREBROSPINAL FLUID, IN HEALTH AND IN DISEASE. Second Edition, Revised. By Abraham Levinson, B.S., M.D., with a foreword by Ludvig Hektoen, M.D. 267 pages. St. Louis: C. V. Mosby Co., 1923. Cloth, Price \$5.00.

Those familiar with the first edition of this book will welcome the second edition. Latest developments in spinal fluids are incorporated, new instructive illustrations are added and some of the old illustrations discarded, making

the volume thirty-six pages larger than the previous edition. The first chapter, of seventeen pages, is an exceedingly interesting history of cerebrospinal fluid, tracing its development from the time of Hippocrates to its present standard. The second chapter deals with the anatomy and physiology of cerebrospinal fluid. The methods of obtaining cerebrospinal fluid are clearly described and the reasons for failure to obtain the fluid are given in detail. The chapters on the physical and chemical properties and physiochemical properties of the spinal fluid are indeed valuable for those who are interested in more than routine spinal fluid examinations. Pathologic spinal fluids and methods of examination of such fluids for diagnostic purposes are plainly and clearly described, leaving nothing to the imagination; every step in every procedure is precisely set forth. Chapter 8 is devoted to the pathologic findings in the fluids in various diseases affecting the nervous system; while in Chapter 9 the author discusses intraspinal treatment in various types of acute meningitis, syphilis, chorea and tetanus. A bibliography follows each chapter. The author has, with this book, successfully met the long time demand of the clinical pathologist, the pediatricist, neurologist and internist.

G. B. KRAMER, M.D.

GETTING READY TO BE A MOTHER. Carolyn Conant Van Blarcom. New York: The Macmillan Company.

Miss Van Blarcom, the author of this book, is a trained nurse, who has had a wide experience in hospital obstetrical work. It is intended for young expectant mothers as a guide for prenatal hygiene, and to explain the numerous unusual events which occur during this period. The material is well presented. It is systematically and simply stated. The illustrations are well selected and executed. Any intelligent woman can secure accurate and interesting information concerning her condition and care. The book should certainly be in the hands of all nurses who are doing obstetrical work. For private patients some discrimination will be necessary in recommending works of this type, but this book is a distinct and valuable addition to the available material.

ARCHIBALD L. McDONALD, M.D.

PRACTICE FOR SALE—General practice in south-central Minnesota; modern county seat town in prosperous farming section; average competition; good collections; no real estate; will sell for price of part of equipment. Address B61, care of MINNESOTA MEDICINE.

WANTED—A physician acquainted with either the Scandinavian or German languages to locate in excellent farming community. Nothing to sell. Address B66, care of MINNESOTA MEDICINE.

LOCATION OPEN for progressive young doctor, preferably Catholic, county seat town of 4,500 population, containing college with enrollment of 500, state hospital of 1,500. Community hospital now being floated. In heart of fine farming and dairying community. Suite of three rooms available on ground floor in rear of drug store on best corner of city. Has been occupied by physician for 20 years. Write or call L. L. Bender, St. Peter, Minn.

TRAVELER WANTED for Minnesota. Splendid position for physician. Liberal contract; no books. Address B63, care of MINNESOTA MEDICINE.